GeoComm

ISICSB 9-1-1 Feasibility Study

Final Recommendations Report

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Overview

GeoComm is pleased to provide the Iowa Statewide Interoperable Communications System (ISICS) Board and the 9-1-1 Communications Council this Draft Recommendations Report for the Iowa 9-1-1 Feasibility Study Project. There are 42 recommendations contained within this report. GeoComm believes that the recommendations, if accepted, can significantly enhance 9-1-1 service throughout the state. The ISICS Board and 9-1-1 Council are encouraged to review and consider the recommendations when planning for the future of 9-1-1 in Iowa.

The preliminary findings and discussions contained in this report provide the state with a strategic framework for decision making and future planning. While there are high-quality public safety communications services provided under the current structure, there are many benefits to be obtained from enhanced synergy between agencies and a plan for improvements in governance, operations, technology, and fiscal management.

After examining and assessing the data, interviewing key stakeholders, visiting selected Public Safety Answering Points (PSAPs), and observing public safety communications operations throughout the state, GeoComm developed a set of recommendations for consideration that will help the state and local jurisdictions advance the level of service in Iowa. In addition, this report provides potential obstacles to the recommendations and possible strategies to mitigate the impact of the potential obstacles should the recommendation be adopted.

GeoComm appreciates the opportunity to partner with the State of Iowa to address concerns and strategically plan for the future. We are confident that the recommendations provide a roadmap to opportunities within the state.

9-1-1 Policy

GeoComm has reported that from our observations and analysis, the limited coordination of services and purposeful "hands off" approach by the state in the management and oversight of local 9-1-1 services has resulted in a less than comprehensive picture of the costs and other metrics of the state's 9-1-1 system. The lack of a single control point for managing the overall costs of 9-1-1 has resulted in an inability to provide an overall 9-1-1 "state of the state" to the policy makers.

The opportunity for state policy makers to have a clear view of how 9-1-1 is managed, how it is paid for, what it costs to operate, and what consistent service standards are followed, offers potential to establish and enact effective governance policy and to manage costs in a more productive way.

There is further 9-1-1 policy opportunity to enact legislative modifications to update the language in the legislation to bring the law related to Enhanced 9-1-1 (E9-1-1) service more in line with current technology and regulations.

GeoComm was asked to evaluate and provide recommendation on the concept of regional call centers with local dispatch centers. Throughout the data collection, interview, and assessment process, the concept of regionalization was considered and evaluated. When looking at the efficacy of regional call centers with local dispatch centers, GeoComm finds that there is no financial or operational advantage to creating regional call centers and leaving independent dispatch centers within Iowa's existing network and governance structure. There may or may not be significant operational and financial advantage to full PSAP/dispatch consolidation should local agencies decide to study the feasibility of consolidation within their own region. While it may not be feasible for the state to initiate or direct consolidation, local agencies should be encouraged to look for synergy with their neighbors where it makes operational and financial sense to do so. The state should consider opportunities to encourage such research and feasibility projects.

Opportunities for Enhanced Decision Making

Engaging the local jurisdictions and the PSAPs in partnership with the state planners and authorities will provide further opportunity for collaborative decision making, thereby offering additional prospects for service improvement.

Next Generation 9-1-1 (NG9-1-1) planning and implementation will require more collaborative methods for addressing the concerns of local agencies. Policy related to a more integrated and coordinated approach to 9-1-1 management will be essential to sustaining the high quality of E9-1-1 service in Iowa. The NG9-1-1 effort will require all parties, local and state, service provider, and policy maker to commit to more inclusive and participatory governance.

Sustainable Funding

GeoComm finds that the state and local jurisdictions need to consider multiple options for mitigating the decline of funding while at the same time seeking ways to reduce costs. As reported in the Assessment of Existing Conditions Report, GeoComm finds that the current 9-1-1 surcharge model will not sustain the current level of 9-1-1 services across the state, nor will it provide the appropriate revenue for the long-term. Local budgets will be impacted harder as surcharge revenues continue to decline. In addition, the current funding structure will not provide adequate funding to advance the network to the next level of service as public demand for more technologically sophisticated and formerly non-traditional forms of communication become the norm.

Additional revenues can be realized in the short-term by eliminating cost recovery and equalizing surcharge fees among all service types, but it is unlikely that there is the necessary political will for increasing payments or fees to the degree necessary to keep up service levels. The resources necessary to support the current PSAP configuration are substantial and efforts to better control such costs are reasonable and appropriate.

In a very real sense, communities may no longer be able to afford to operate in the same way they always have. Local jurisdictions should engage their county Joint E9-1-1 Service Boards to explore methods for reducing the costs to provide E9-1-1 services in their communities, including but not limited to sharing technology or infrastructure as well as combining PSAPs or other local cost sharing efforts.

The state may need to adjust the funding model that has been in place for a number of years in order to continue to provide services the public expects and deserves by assuming a stronger leadership role and a more collaborative approach to oversight and shared management of the systems.

Opportunities for Knowledge Building

GeoComm found that network infrastructure best practices are not followed by many of the PSAPs in Iowa. There are significant opportunities to improve understanding about the applicability of network standards and best practices to the PSAPs. Redundancy and diversity methodology education can be useful to local leaders who must make decisions at the local level to improve continuity of operations during minor service interruptions, regional disasters, and/or large scale incidents.

Risk and Mitigation

In our previous reports, GeoComm reported concerns related to the risk that is inherent in the current 9-1-1 system. There are a variety of single points of failure and subsequent risks within the Iowa network. The outage reports GeoComm was able to obtain demonstrated that the 9-1-1 service provider has had an excellent service record and that service outages and even minor disruptions have not been a frequent issue for the state. However, wireline selective routers are not interconnected; there are some PSAPs still direct trunked which means they are not connected to any selective router; and there is limited redundancy or diversity which increases risks if an end office serving the PSAP becomes isolated. This would leave the PSAP vulnerable and unable to adequately serve its constituents. For PSAPs connected to a selective router, the vulnerability is significant if a cable is cut which would interrupt all 9-1-1 service to the PSAP. The single wireless selective router serving the 9-1-1 needs within the entire state also provides no backup or interconnectivity in the event of a service disruption. In the case of a failure with that selective router, the wireline E9-1-1 service to 41 PSAPs and a significant portion of the population would be disrupted, and wireless 9-1-1 service for the entire state would be disrupted.

Interoperability

The ability of public safety personnel to communicate across jurisdictional boundaries during regional and large-scale emergencies is one of the most compelling challenges facing public safety agencies in Iowa and throughout the nation, as personnel from all public safety disciplines and governmental levels are required to communicate with each other.

GeoComm's assessment of interoperability capacity in Iowa concludes that good progress has been made toward achievement of the interoperability goal pertaining to technology, with most first responders being able to communicate over VHF channels with their immediately surrounding agencies. During the study, however, GeoComm was presented with evidence that, while the technology to provide local and in many cases regional interoperability exists, there are instances where end users are not familiar with the capabilities that are available or how to activate those interoperability capabilities. Creating a common understanding among local agencies as to what local, regional, and statewide capabilities exist, how to activate them, and the subsequent practice to reinforce what they know, will in itself enhance interoperability.

Interoperability in Iowa involves both technological and operational issues that must be addressed through a coordinated, regional planning process. Interoperability planning requires that jurisdictional boundaries be set aside since the overarching goal is for agencies to operate across those boundaries. This in turn demands that agencies relinquish some control during those situations in order to achieve the benefit of a well-organized and efficient attack on the emergency situation.

The state has implemented tools, such as the Communication Assets Survey and Mapping (CASM) inventory tool, and established regional managers to coordinate and encourage its use. The Statewide Communications Interoperability Plan is being constantly revisited and updated with new and accurate information. These tools can be helpful to local emergency managers and other public safety planners. It appears that some additional education would be beneficial for these tools to reach their full use potential.

Next Generation Migration

It is imperative that Iowa move forward with NG9-1-1 implementation expeditiously and with adequate incentives for local jurisdictions to migrate rapidly in order to maximize efficiencies and maintain service quality. Managing the migration to NG9-1-1 will require a high degree of coordination and collaboration. During the migration process, it will be critical that the decision makers remain focused on E9-1-1 customer service, responder safety, and effective resource management. Because Iowa PSAPs have heretofore been responsible for their own operations and local decisions, the concept of collaboration in order to effectively manage NG9-1-1 services will be a new approach for local jurisdictions. Engaging local policy makers in the larger decision making process will present challenges, perhaps, but can only serve to benefit the state and ultimately the local jurisdictions as well.

Conclusion

GeoComm has made numerous recommendations in this report focused on governance, funding, and service enhancements for 9-1-1 in the state of Iowa. The recommendations establish a methodology and mechanism to enrich and support 9-1-1 to a higher degree both in the near term and as a future plan forward. We have been encouraged by the level of support received during the study process and share the state's goal for the most efficient and cost effective service for the citizens of Iowa.

2 Governance

Discussion

As GeoComm established in the Existing Conditions report, wireline 9-1-1 is addressed and managed at the local level through individual county Joint E9-1-1 Services Boards on behalf of their local Public Safety Answering Points (PSAPs). The local authorities contract for and manage wireline 9-1-1 in an independent and specifically local manner. In the case of Iowa, this essentially means a multitude of different ways the systems are dealt with using a complicated and disparate network of five geographically diverse wireline Enhanced 9-1-1 (E9-1-1) selective routers which are not interconnected, and several counties that have only Basic (non-enhanced) 9-1-1 service. This methodology and structure can be just as complex and costly for the 9-1-1 service provider as it is for the PSAP. Each individual county Joint E9-1-1 Service Board is authorized through statute to set its own 9-1-1 surcharge fee by a defined process. Because of this structure, there are potentially as many different collection and remittance levels for a service provider as there is for a county Joint E9-1-1 Service Board. This complexity adds cost.

E9-1-1 Communications Council Role

The Iowa E9-1-1 Communications Council was established to serve in a consultative role with the E9-1-1 Program Manager and the Administrator of the Homeland Security and Emergency Management Division (HSEMD). The goal of the council is to have the appropriate stakeholders in place to advise and make recommendations to the administrator and program manager regarding implementation and development of the 9-1-1 system in Iowa. Current membership includes public safety stakeholders representing response disciplines of fire, law enforcement, Emergency Medical Services (EMS), as well as representatives of public safety professional associations, emergency management, service providers, and the public. The E9-1-1 Communications Council and E9-1-1 Program Manager have the authority to ensure that statewide compliance with required standards and accountability for operations are accomplished. This includes all 9-1-1 performance and development within the state and is not limited to wireless although that has been the focus of the state 9-1-1 Program Office. Current governance structure does not allow the state policy stakeholders to analyze the effectiveness of 9-1-1 statewide.

Standards

Network standards, outlined in state law, are generally related to current technology and processes. The standards are voluntary. The network standards should be modified to allow for Next Generation services as well as to establish a baseline of services to ensure, to the extent that is possible, that all citizens in Iowa are afforded equal E9-1-1 service. The standards should assist local PSAPs in accomplishing these goals.

Management Information Systems

The state's role in defining Next Generation 9-1-1 (NG9-1-1) services for the citizens of Iowa, the implementation of emerging technologies and a continuing progression of public safety system upgrades by local PSAPs have placed a high demand on 9-1-1 record management. In some states, Management Information Systems (MIS) are an operational equipment requirement to measure, compile, collect, and evaluate call volumes and answering time statistics. The use of MIS or call accounting software can provide statistics instrumental in determining optimal wireless/wireline trunk configurations and conformity with a P.01 grade of service standard. The statistical information is an effective tool with which to implement or enhance public safety quality assurance. Producing statistical reports for call volume and tracking activities lays the foundation for improved call management and system performance. MIS data can be utilized at the state level and as qualifying data required in potential federal grant applications. It provides the ability to answer legislative requests for call volume information for the entire state, county, or regional jurisdictions.

Coordination of Services

Because the governance and responsibilities are divided between local and state government within the present configuration, there is no single repository for 9-1-1 system or operations information, no coordination of services, and no single control point for managing the overall costs of 9-1-1. The inability of the state policy makers to have a clear view of how 9-1-1 is implemented, managed, how it is paid for, what it costs to operate, how many calls for service are being processed and whether consistent service standards are followed makes it difficult to establish and enact effective governance policy and to manage costs.

NG9-1-1 will require increased state coordination in order to be functionally effective. Future legislative efforts may need to consider a more integrated and coordinated approach than has been needed in the past. The state can anticipate that this concept may be met with acceptance by some who realize that the limited coordination of all 9-1-1 services may not have been in the best interest of the Iowa public. In contrast, others may express concern that increased coordination at the state level may lead to less control at the local level. Collaborative methods for addressing these concerns will be required.

E9-1-1 Program Office Responsibilities

The state E9-1-1 Program Office has a stated mission to administer the requirements of chapter 34A of the Iowa code. The program manager acts under the supervision of the administrator of the Iowa Homeland Security and Emergency Management Division and is advised by the E9-1-1 Communications Council.

The state E9-1-1 Program Office is responsible for:

- Setting the E9-1-1 wireless surcharge rate and modifying the rate as necessary
- Paying the costs associated with the E9-1-1 wireless program, administering the wireless fund and allocating and distributing the fund monies to PSAPs in accordance with state law
- Receiving requests from and granting waivers to local entities as part of the 9-1-1 Service Plan process
- Developing a statewide wireless E9-1-1 Plan
- Managing the wireless cost recovery and reimbursement to the wireless carriers, Local Exchange Carrier for 9-1-1 transport and to the third party Automatic Location Identification (ALI) database providers for routing and database services

All countywide 9-1-1 Service Plans, including all Plan modifications are to be reviewed and approved by the by the E9-1-1 Program Manager. When a modification is necessary, however, the legislation is vague and unclear, and there is disagreement about the requirements.

Joint E9-1-1 Service Board Authority Chapter 605-10.3 of the Iowa Code (34A) also authorizes each county to establish a Joint E9-1-1 Service Board and frames the representation. Every public safety agency serving a region within the county is eligible for voting membership on the Joint E9-1-1 Service Board. The county Joint E9-1-1 Service Board is required to maintain an enhanced 9-1-1 service plan. The legislation states that the 9-1-1 Service Plan is to include a number of specific elements and that the plan is to be "maintained." The rules imply that modifications to the plan are to be made when the required elements of the plan change. There is also specific language that describes who receives notification of the modified Plan.

Management of public safety communications and associated response to citizen calls for service is one of the core functions of government and a critical component of the safety and security of the community. How a state or a local jurisdiction implements, operates and what level of efficiency is in place will impact the quality of emergency services.

Recommendations

Recommendation 2.1: GeoComm recommends the State of Iowa develop a comprehensive and collaborative statewide 9-1-1 strategic plan.

GeoComm finds that the State of Iowa lacks a cohesive and coordinated plan for E9-1-1 services that encompass both the local needs and statewide mission. The 9-1-1 Communications Council, within its authority, should convene a comprehensive strategic planning effort.

This strategic planning initiative should be facilitated by a professional, independent party, to alleviate the expressed concern of undue state control.

In addition, the initiative should be inclusive and all public safety stakeholders should be invited to participate. Every effort should be made to ensure that the process is collaborative and addresses needs of the local public safety agencies and the state E9-1-1 Program, and addresses the public expectations for E9-1-1 service. The strategic plan should focus on the development of a statewide roadmap that clarifies the roles and responsibilities for the three levels of 9-1-1 management in the state (1) the local Joint E9-1-1 Services Board, (2) the state E9-1-1 Program Office and (3) the 9-1-1 Communications Council.

Strategic planning is an organization's process of defining its strategy, or direction, and making decisions related to allocating its resources to pursue this strategy. In order to determine the direction of the organization, it is necessary to understand its current position and the possible avenues through which it can pursue a particular course of action. A strategic planning process should end with objectives and a roadmap of ways to achieve them. The goal of strategic planning is to increase clarity in the mission and a defined method to achieve that mission.

At a minimum the strategic plan should address:

- Planning - GeoComm recommends a comprehensive planning process that will define how planning is conducted; how frequently the strategic plan is updated; what elements should be included; and who is considered a participant or interested party.
- PSAP Criteria - the state should determine what minimum criteria will be required to be a PSAP in the State of Iowa; the state should determine minimum staffing levels, and there should be minimum network infrastructure requirements and minimum training requirements for call taking and dispatching staff that are consistent and meet national standards
- Standards Development and Compliance - there should be defined minimum network standards and required 9-1-1 database and accuracy levels and Geographic Information System (GIS) accuracy levels
- Local 9-1-1 Service Plan - there should be an annual review and update as required; certification of standards compliance to the state and the 9-1-1 Council; as well as full 9-1-1 operational budget information for each entity involved in the Local 9-1-1 Service Plan
- State Grant Program - grant programs should be focused on assisting the PSAP transition to future NG9-1-1 services; grant programs should also be focused on assisting PSAPs to meet the newly established PSAP criteria standards and other standards to be developed; appropriate documentation should be required to ensure funds are awarded in concert with the grant program guidelines and are used for the stated purpose
- Oversight - we recommend that in order to receive state 9-1-1 distributions from the wireless surcharge or any state grants, a PSAP must be in compliance with state standards and rules including a current Local 9-1-1 Service Plan

- Fiscal Planning - once the strategic plan is completed and the state has a clear vision of its future, the amount of funding that will be needed can be more-closely estimated. We recommend the appropriate 9-1-1 surcharge rate or adjustment be proposed to the legislature once that estimate is available.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 2.1 and strategies to mitigate their impact:

1. Lack of trust needs to be overcome
    a. Involve stakeholders and offer them participation in developing the outcomes
    b. Ensure collaboration by being inclusive in the process
    c. Foster a "we're all in this together" attitude and viewpoint
2. Lack of staff and financial resources at the state program level
    a. Engage an independent facilitator to drive the process
3. Lack of data creates analysis challenges; obtaining reliable data for planning may be difficult
    a. Collaboration of all parties and desire to be part of the process to influence favorable outcomes may help to ensure sharing of necessary information

Recommendation 2.2: GeoComm recommends the State of Iowa enhance the involvement, authority, and function of E9-1-1 Communications Council.

The Council should assume the authority that exists in statute and expand its activities to further support the state E9-1-1 Program. The E9-1-1 Communications Council is an advisory board to the state E9-1-1 Program Office and is directed to advise and make recommendations to the administrator and the E9-1-1 Program Manager related to the development and implementation of the state E9-1-1 system as described in the Iowa Code. Representation is broad and draws its membership from the stakeholders.

GeoComm believes that the role of the E9-1-1 Communications Council should be strengthened beyond advisory and its activities enhanced to give additional support to the state E9-1-1 Program Office to carry out many of the recommendations contained in this report. Because the representation on the board is structured to allow for participation from all stakeholder groups and interested parties, it is the appropriate vehicle to carry out planning and oversight activities of the state E9-1-1 Program.

At a minimum, the E9-1-1 Communications Council should be responsible for:

- Approving annual updates or annual review certification of Joint E9-1-1 Service Board Plan submissions
- Approving grant awards
- Conducting the annual review and update of the statewide 9-1-1 strategic plan

- Recommending the adoption of standards
  - Because standards exist in legislation today, it is likely that any future enhancements to standards as recommended in this document will also need to be codified in statute. The E9-1-1 Communications Council should be responsible for establishing and recommending those standards to the legislature.
  - Once the standards are established and adopted, administrative rules should be written through the standard state rule making processes to interpret the legislative intent and to provide direction to the state E9-1-1 Program Office, the E9-1-1 Communications Council, the county Joint E9-1-1 Service Board, and the local public safety agencies
- Recommending legislative changes pertaining to the state E9-1-1 Program in Iowa
- Ensuring standards compliance by the state and local agencies

Currently the Iowa Code 34A.15 defines the E9-1-1 Communications Council's authority and limitations. The Code states that "the council shall advise and make recommendations to the administrator and program manager regarding the implementation of this chapter." Further, the Code provides direction for the council that stipulates that "such advice and recommendation shall be provided on issues at the request of the administrator or program manager or as deemed necessary by the council." It would appear that most of the recommendations included here, especially with the changes recommended to statute, are within the authority and scope of the E9-1-1 Communications Council. Specific expanded authority to "approve" grants and updates to Joint E9-1-1 Service Board E9-1-1 Plans should be clarified in statute.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 2.2 and strategies to mitigate their impact:

1. Legislative and rule changes are often time consuming and difficult
   a. Package the need to enhance the activities of the E9-1-1 Communications Council with other legislative initiatives such as the need for standards, to demonstrate a cohesive plan to address the issues
   b. Prepare as much background as possible and anticipate policy maker questions to minimize the time required to address questions; thereby potentially shortening the legislative process
   c. Utilize the advocacy of the E9-1-1 Communications Council members themselves to assist with responding to questions or concerns from legislators

Recommendation 2.3: GeoComm recommends the State of Iowa establish standards for the efficient and effective delivery of 9-1-1 services.

Standards are critical to establishing and maintaining high quality and consistent service. To be effective, 9-1-1 and PSAPs require standards just as any other critical service. It has been demonstrated that standards, when properly established and implemented, help to ensure consistent service levels, reduce costs and risks, and improve efficiency. Standards should be developed in conjunction with a statewide 9-1-1 strategic plan.

Current network standards, outlined in state law, are generally related to current 9-1-1 technology and 9-1-1 processes and these standards are voluntary. There are no standards related to PSAP operations, services, minimum staffing levels, or call handling processes. There are minimal, broad training standards. The standards will need to be modified for Next Generation services. In addition, the E9-1-1 Communications Council should establish standards in the following areas:

- PSAP Criteria - minimum trunk capacity; annual trunk capacity analysis; database accuracy requirements such as no record found threshold[1]; call answer time; call processing time requirements and other related criteria the strategic planning process might identify to ensure efficient and effective 9-1-1 service
  - Training - initial and Continuing Education Units (CEUs) training programs should meet nationally accepted industry standards
  - Emergency Medical Dispatching (EMD) - should be required and minimum training established; Quality Assurance/Quality Improvement program required
  - Staffing - minimum staffing levels established
- 9-1-1 Plan - annual review or update of the local Joint E9-1-1 Service Board 9-1-1 Service Plans should be required

9-1-1 Plan format should be modified to include:

- List of communities served and description of the service area
- List of public safety agencies dispatched
- Statistical data such as annual 9-1-1 call counts; speed of answer; call processing time may be included as an appendix report and updated on an annual basis

[1] NENA 9-1-1 operational requirements for accuracy of records in the 9-1-1 Automatic Location Identification (ALI) database allow no more than .05 percent of calls that generate a No Record Found (NRF) from wireline telecommunications service provider customers during any calendar year. NRF calls are generated when a wireline 9-1-1 call is placed into the network without an accurate 9-1-1 ALI database record and might not be answered by the appropriate 9-1-1 Public Safety Answering Point.

- Certification that Joint E9-1-1 Service Board responsibilities are being met and that the Joint E9-1-1 Service Board is meeting their obligations such as conducting an annual review of the 9-1-1 Service Plan or approving a budget
- Certification from the board that the plan meets the requirements of those public safety agencies whose services will be available by dialing 9-1-1
- Network diagrams and description of service
- Description of a secondary means of providing service in the event of a failure in the network or portion of the network serving the PSAP, or failure of the PSAP primary electrical power. Redundancy of systems should be described including conditional routing plans.
- Complete operational budget detail might also be included as an appendix report and included with the annual review and update of the Plan

Legislation should codify the requirement for standards. Once standards are established, they should be written in administrative rules and compliance with the standards should be required in order to receive 9-1-1 distribution or any state grant funding.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 2.3 and strategies to mitigate their impact:

1. Standards development, like strategic planning, will require involvement from stakeholders and local jurisdictions
    a. Participants will need to understand that being a part of the solution and helping to drive the most beneficial outcomes is in their best interest
    b. Much can be learned from already developed national standards that can easily be adopted locally to minimize the effort required
    c. Implementation of standards and standards compliance may increase costs at the state and local level. Additional funding may be required to ensure standards compliance.
    d. Consider a phased approach or target date by which compliance with standards is required to assist local jurisdictions to meet requirements
2. There may be resistance from local jurisdictions and unwillingness to have standards imposed
    a. As much as possible, make local PSAP authorities part of the standards setting process
    b. Include elected officials who will likely be required to approve additional fiscal support for standards

Recommendation 2.4: GeoComm recommends the State of Iowa implement 9-1-1 call data collection systems for comprehensive system management and planning.

In order to assist the state, the county Joint E9-1-1 Service Boards, and local authorities, the state may want to consider an automated data collection system to collect 9-1-1 call data. MIS available for 9-1-1 have often used the PSAPs' computer aided dispatch systems as data sources. There are, however, other products which allow the use of data networks and secure virtual private networks to obtain real-time call statistics from any PSAP in the jurisdiction. Managing PSAP data in a secure environment using a web browser and a secure data connection, these systems can provide standard reports, as well as fully customizable report generation for both call detail records and trunk usage. They can be vendor independent and can seamlessly report county, state, or PSAPs call statistics from one web-based location regardless of hardware manufacturer. Some applications offer a variety of reports that can provide insight on call and trunk statistics. There may be cost savings if PSAPs can replace existing reporting software, and such reporting may bring statistical data to areas not able to afford them.

Reporting systems can also provide the agency or the state with facility and call related statistics such as trunk utilization, speed of answer (including ring time), and volume analysis (aggregate and individual call taker). Implementation of such a system in Iowa could benefit local PSAPs as well as the state.

By installing a data tracking system a number of advantages will be achieved:

- True statistical call volume data for legislative requests, grant applications, and overall system performance analysis
- Traffic management control through calls by circuit report lists the number of calls received on each 9-1-1 circuit each day
- Staffing management through busy hour reports which can identify the busiest hours over a designated period of time
- Circuit utilization management through reports which provide percentage of time that one trunk in a trunk group is engaged, two trunks in a trunk group, and so on. This report is useful in identifying the effectiveness of the trunk group configuration.
- Since all of the data associated with 9-1-1 calls within the state will be collected by a single system, calls can be tracked as they are transferred from one PSAP to another for investigative purposes
- Rules used to calculate various measurements for call answer and duration times will be applied in a consistent manner throughout the state
- Comparative data will be available that will reflect call statistics for all PSAPs. In time, a robust system will automatically provide comparative data for the same PSAP from the previous year.
- Staff performance data including call duration reports which provide the call count, average duration of queue time, ring time, hold time, talk time, and overall duration for each hour of the specified date range

Such a system, when properly implemented and utilized for management purposes allow the PSAP and the state to assess PSAP performance in a secure environment.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 2.4 and strategies to mitigate their impact:

1. Cost of implementation and ongoing costs of a management information and statistical data collection system
    a. Additional revenue may be realized by implementing other recommendations in this report included in the Finance section
2. Political ramifications with the state having access to "all" PSAP call statistics
    a. Policy makers and local practitioners must recognize that appropriate and reliable data is required for adequate decision making at both state and local levels
3. State will be able to monitor length of time to answer by county or PSAP
    a. The need for access to statistical information, necessary to ensure standards compliance and consistent service levels to all citizens, must be adequately communicated to local jurisdictions and policy makers
4. Lack of staff at state level to monitor performance and statistics
    a. Increased resources at the state level may be necessary to adequately manage the additional services and activities recommended in this report

Recommendation 2.5: GeoComm recommends that the state E9-1-1 Program Office and the E9-1-1 Communications Council seek the State Attorney General's Opinion on statute language related to requirements for maintaining an E9-1-1 Service Plan.

The current Iowa legislation states that the E9-1-1 Service Plan is to include a number of specific elements and that the plan is to be "maintained." The rules imply that modifications to the plan are to be made when any required element of the plan changes, and there is specific language that describes who should receive notification of the modified Plan. Plan updates have been random and the state has recently found it necessary to request updated 9-1-1 Plans from all Joint E9-1-1 Service Boards throughout the state. The requirements for updating the 9-1-1 Plans appear to be open to interpretation. GeoComm recommends that the state E9-1-1 Program Office request a legal opinion from the state Attorney General's office of legislative intent to determine under what conditions an update to the 9-1-1 service plan is required.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 2.5 and strategies to mitigate their impact:

1. Result may increase requirements on the Joint E9-1-1 Service Board
    a. Adequate notification of any changes to the requirements should be communicated to Joint E9-1-1 Service Boards and local jurisdictions

Recommendation 2.6: GeoComm recommends that the state E9-1-1 Program Office and the E9-1-1 Communications Council develop a public information campaign to inform the citizens of Iowa of the strategic planning process and the need for migration to Next Generation 9-1-1 services.

9-1-1 authorities are often hesitant to start a public discussion about 9-1-1 services in the media. However, there can be advantages to doing so. Generally, 9-1-1 services are, and perhaps should be, transparent to the public. They are always available when they are needed, the public calls, or the response agency shows up at the scene of the incident in a prompt and responsive manner. The inner workings of a 9-1-1 operation including the technology, the staffing and training, the protocols and procedures required to function effectively are unknown to the public. When a significant change or upgrade to the service is required such as the transition to Next Generation services or an overhaul of the governance and funding support structure is under consideration, it may be necessary to bring the issue to the public so that the changes can be fully explained and understood. A public information campaign can be an essential tool to inform and educate.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 2.6 and strategies to mitigate their impact:

1. Public perception is that all is "okay" with the current system; they do not understand the underlying issues because public officials generally do not want to undermine citizen confidence in the public safety system
    a. Any public message regarding strategic planning process should focus on future communication needs of the public and ensuring high quality public safety emergency response services
2. Cost of a public information campaign
    a. Additional revenue may be realized by implementing other recommendations in this report included in the Finance section

3 Funding

Discussion

GeoComm has reported that the primary funding methods for Public Safety Answering Point (PSAP) support across the State of Iowa are the wireline 9-1-1 surcharge fee which is managed by the county Joint E9-1-1 Service Boards and the wireless 9-1-1 surcharge fee which is managed by the state E9-1-1 Program Manager, a division of the Iowa Homeland Security and Emergency Management Division (HSEMD).

The wireline fee is collected by wireline telephone service providers from subscribers and remitted to the respective county Joint E9-1-1 Service Boards for the provision of E9-1-1 services in their respective jurisdictions. The maximum monthly surcharge fee is $1.00 per month without a special referendum approving up to $2.50 per month for a two year period. Currently 81 counties collect $1.00 per month while 15 counties have a fee less than $1.00 and two counties have a fee greater than $1.00. The Scott County Joint E9-1-1 Service Board is the only county that does not have an established wireline surcharge fee.

The wireless 9-1-1 surcharge fee is collected by wireless service providers across the state and remitted quarterly to the HSEMD for deposit into the State of Iowa E9-1-1 Emergency Communication Fund, managed by the state E9-1-1 Program Office. By statute, the fund is to be used to pay for wireless Phase II Enhanced 9-1-1 (E9-1-1) service across the state. The statute provides for specific amounts of the fund to be dedicated as follows:

- For the reimbursement of wireless service providers, pursuant to contracts entered into by the State and the respective wireless carriers
- Network and database services necessary to facilitate wireless E9-1-1
- The operation of the state E9-1-1 Program Manager office
- Twenty-five percent to be distributed to the Joint E9-1-1 Service Boards for PSAP operations

The state also dedicates a portion of the funds for the enhancement of its wireless program responsibilities, future development, and grants to local counties for special projects.

After reviewing the budgets of the 99 Joint E9-1-1 Service Boards, GeoComm has determined that the current surcharge funding stream is inadequate to fully support the provision of E9-1-1 services across the state and many of the counties are required to subsidize the operations with local revenues and state grants. Budget estimates indicate that at the end of fiscal year 2010, 31.67 percent or $8,006,220 of the total county reported budget expenditures required funding from revenue methods other than the two surcharge sources. In 2011, the amount was 23.84 percent or $5,374,396.

It is also important to note that there is great disparity in the budget amounts across the State of Iowa. The reported budget estimate for the Decatur County Joint E9-1-1 Service Board in 2011 was $30,899 while the Polk County reported budget estimate was $2,639,307. Even though there is a huge population difference between the two counties, one would believe that providing PSAP services costs more than the reported amount. Scott County did not report an operating expenditure amount while it received $426,875 in wireless surcharge revenue.

It is also important to note that the county Joint E9-1-1 Service Board budgets filed with the Iowa Department of Management do not include the cost for staff operating the PSAPs.

In examining the budgets, GeoComm found the following trends with regards to current funding methods:

- Wireline surcharge revenues continue to decrease across the State of Iowa at an accelerating rate. The total wireline surcharge revenue remitted across Iowa in 2011 was six percent less than that remitted in 2010.
- Wireless surcharge revenues continue to increase, but at a decelerating rate.
- 9-1-1 surcharge is not consistently collected across the state on Voice over Internet Protocol (VoIP) subscribers. The statute is vague and not easily enforceable.
- Total surcharge is declining at an accelerating rate with wireless surcharge only supporting approximately 20 percent of the surcharge revenue source.

The trends identified in the State of Iowa are consistent with those across the nation. During the last several years, there have been some surprising changes in communications in use by the public. For example, the Cellular Telecommunications Industry Association (CTIA) has reported that while 7.7 percent of United States households were wireless only in June 2005, that has grown to 24.5 percent in the same month of 2010.[1] As more subscribers migrate to wireless only service, the wireline surcharge disappears with subscribers and at the same time, the wireless customer market is becoming saturated causing a decrease in the growth rate.

GeoComm finds that the current funding model will not sustain reliable 9-1-1 services in the future without the continued growth of local tax revenue contributions to the system. We recommend that the State of Iowa consider the following funding recommendations as it develops its path going forward.

[1] http://www.ctia.org/advocacy/index.cfm/AID/10323

Recommendations

Recommendation 3.1: GeoComm recommends that the state identify the actual costs for operating the 9-1-1 call delivery and emergency dispatch operations across the State of Iowa by amending the annual budget format to require total system costs, including personnel and training.

GeoComm has evaluated the funding and financial position of 9-1-1 service across the State of Iowa based on the data available. One large gap is that the total cost for operating PSAPs in Iowa is not available because of the limited expense categories reported in the annual county budgets submitted to the state.

GeoComm recommends that the budget format be revamped to include the total costs associated with the actual delivery of the dispatching service. GeoComm believes that the gap between the budget amount reported, and the actual costs is significant given the exclusion of personnel costs associated with PSAP operations.

As in many other states, the establishment of legislation for the provision of E9-1-1 wireline services in the late 1980s and early 1990s was limited to implementing regulated services such as Automatic Number Identification (ANI), Automatic Location Identification (ALI), and Selective Routing (SR) provided by Incumbent Local Exchange Carriers (ILEC) or telephone companies. The statutes provides only for call delivery to the local PSAP. As the service has become more complex and costly and better financial data is obtainable, it is time for the State of Iowa to reevaluate its position and consider the total cost for delivery of service to the caller.

Once the total cost for service is determined by more comprehensive budget reporting methods, the State of Iowa can look at the surcharge requirements and adjust accordingly based on reliable data.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 3.1 and strategies to mitigate their impact:

1. There will likely be political obstacles to the change, including the perception that the state is interfering in the local jurisdiction's business.
    a. It is important to educate the local participants on the objectives of the proposed budget planning change and the benefits of identifying the total costs for service.
    b. Being able to identify the total cost of providing 9-1-1 service across the state will be helpful in getting local and statewide support for changes in revenue and wireless distribution at the legislature.
    c. The lack of comprehensive data creates analysis challenges.

2. There will likely be complaints at the local level about the amount of time required to research and provide the budget data required.
    a. It is important to keep the goal of providing adequate funding to support the 9-1-1 system operations in front of participants.
    b. It is important to identify the areas where personnel resources are not sufficient to meet the needs for effective operations.
3. There will likely be push back from service providers to the concept of government collecting an even higher "9-1-1 fee", the intended purpose of which would be to pay for things like dispatchers salaries, training, radio systems, and so forth.

Recommendation 3.2: GeoComm recommends that the state equalize the 9-1-1 surcharge fees for any device that can access the 9-1-1 system and provide a means for audit and accountability.

As in many other states, there is a disparity in the State of Iowa between the surcharge rate for wireline and wireless surcharge fees. Indiana, for example, is also seeking a stable, long-term source of funding. It is hoped that legislation currently making its way through the Indiana legislative process will adequately address this same problem that Iowa faces. The 9-1-1 fees for landline and cell phones would become more equalized under proposals that Indiana legislators are considering as they too experience millions of dollars in lost revenue as telephone users have shifted from landlines to cellular plans. Separate plans approved by the Senate and House (as of the writing of this report) would increase the monthly fees charged to cell phones in what legislators say is an attempt to stabilize funding for 9-1-1 services.[2]

As reported, in most counties in Iowa, the monthly wireline surcharge rate is the $1.00 maximum while the state-imposed wireless rate is $0.65. The recent Federal Communications Commission (FCC) CSRIC Working Group 4B, Transition to Next Generation 9-1-1 Final Report[3] states:

> "For those states or 9-1-1 Authorities with sound fund management processes and established equitable funding structures, the erosion of funds does not appear to be a significant problem….States that have not established fee equitability among all technologies continue to experience funds depletion as subscribers shift their communications of choice from traditional wireline service to more mobile devices such as wireless or mobile VoIP. For states or 9-1-1 Authorities that do not have a solid and equitable mechanism for collecting from VoIP providers, the challenge of fund collections is even more of a problem."

[2] http://washingtonexaminer.com/news/2012/02/indiana-911-funding-plans-equalizing-phone-fees/2169426

[3] http://transition.fcc.gov/pshs/docs/csric/CSRIC-WG4B-Final-Report.pdf

If the wireless surcharge rate in fiscal year 2011 had been $1.00 per month, the 25 percent distribution to the county Joint E9-1-1 Service Board would increase by almost 54 percent or $2.1 million, decreasing the local contribution by 40 percent. The percent of wireless surcharge would increase to 35 percent of total surcharge revenues and decrease the rate of decline in surcharge revenue.

If the wireless surcharge rate is increased to $1.00 per month, the wireless emergency communication fund would increase at a substantial rate without the legislature changing the distribution formula and allowing more local control over the fund to meet planning needs.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 3.2 and strategies to mitigate their impact:

1. There is insufficient data available at the present time to identify the real cost of delivering holistically-defined 9-1-1 services in the State of Iowa today.
    a. This is a stop-gap measure for the short-term until the strategic planning is completed.
    b. Most jurisdictions support the increase in wireless service fee.
2. The recommendation does not address the impact of the increase in the state E9-1-1 Program Office Carryover Fund.
    a. The state may increase its grant program in the interim to support Joint E9-1-1 Service Boards that voluntarily seek opportunities to combine technical or operations services or share costs for services. For example, as part of its Development, Support, and Incentive Grant Programs,[4] the State of Massachusetts State 9-1-1 Department offers such grants to their PSAP constituents.
    b. The Carryover Fund will be beneficial in helping the entire state move toward Next Generation (NG9-1-1) with the deployment of ESInets and management systems.

Recommendation 3.3: GeoComm recommends that the state E9-1-1 Program Office propose a change to the Iowa 9-1-1 statute to remove the required reimbursement (cost recovery) to wireless service providers.

As wireless E9-1-1 services were beginning to be deployed in the late 1990, the FCC regulations for wireless carriers permitted them to charge "9-1-1 jurisdictions" (the state, in Iowa's case) for their costs in developing, implementing, and maintaining these services.

[4] http://www.mass.gov/eopss/agencies/state-911/

In a later ruling on a petition filed by King County, Washington, the FCC changed course and declared that wireless carriers had to provide E9-1-1 regardless of whether or not they receive "cost recovery" from the states. However, numerous states had already passed statutes that presumed that these "cost recovery fees" would have to be paid to the carriers and contracts were signed to that effect.

Since the King County ruling was adopted, many of the Tier 1 wireless carriers have forgone the requirement for cost recovery across the country and those that still receive the reimbursement continue to do so because of local or state contractual or statutory requirements. Tier 1 carriers are the large wireless service providers with a national footprint such as AT&T Mobility, Verizon Wireless, T-Mobile, and Sprint/Nextel. Many smaller carriers continue to claim the King County ruling does not apply and that "cost recovery" is essential to their survival.

When the Iowa Legislature amended Chapter 34 in 1998 to create the wireless state E9-1-1 Program within the Iowa Homeland Security and Emergency Management Division, it not only established the wireless 9-1-1 surcharge but also defined the formula for the distribution of the wireless surcharge funds. Since the non-recurring financial obligations for the establishment of the wireless Phase II system have been met according to the requirements of the statute, the current distribution of the fund is the following:

- $200,000 per year supports the operations of the state E9-1-1 Program Manager office.
- Twenty-one percent of the total wireless surcharge generated shall be allocated for cost recovery by the wireless carriers providing E9-1-1 services. Not all carriers are requiring reimbursement and the actual percentage of the fund expended for cost recovery over the past year is 16 percent.
- Local exchange carriers and third-party E9-1-1 ALI database providers are eligible for recovery of costs for maintaining the wireless E9-1-1 selective router and ALI database. The current financial requirement for these services is approximately 40 percent of the quarterly distribution.
- Twenty-five percent of available funds are distributed to the Joint E9-1-1 Service Boards. The minimum amount per quarter each PSAP receives is $1,000, including Department of Public Safety's six PSAPs. These funds are distributed to the service boards based on a defined formula:
  - Total dollars available x 65% x (square mile of service area/total Iowa square miles).
  - Total dollars available x 35% x (number of wireless E9-1-1 calls taken at PSAP/statewide total number of wireless E9-1-1 call).
- The remainder is to be used for the enhancement of PSAPs through upgrades and improvements. Funds not expended in the ways previously identified are deposited into a Carryover Fund for both designated and undesignated purposes.
- Should cost recovery requirement be removed from the statute, the state could redirect the funds to a grant funding program or its Carryover account until a study is completed that provides complete and reliable data on the real cost for delivering 9-1-1 and dispatch services to those in need.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 3.3 and strategies to mitigate their impact:

1. Many of the Tier 2 and Tier 3 wireless service providers have a small, local, or regional footprint for service and have significant political clout in the state legislatures.
    a. The PSAP community must convince the legislature that the provision of 9-1-1 services is a cost of doing business for the carriers.
    b. The FCC ruling has been adopted across the country by many states to set the demarcation point for cost recovery.
2. There may be a movement to reduce the wireless surcharge fee by the 21 percent set aside by statute.
    a. It is important for the PSAP community in the State of Iowa to be proactive and begin the strategic planning process as soon as possible to identify the following:
        i. PSAP standards
        ii. Training standards
        iii. Budgetary standards
        iv. Technology standards
    b. Define the migration path to NG9-1-1 for the state.
    c. Identify the true costs for 9-1-1 services in the state.
    d. Emphasize the need for equal surcharge fees for all classes of devices capable of accessing 9-1-1, as proposed in Recommendation 2 above.

Recommendation 3.4: GeoComm recommends that the state continue the 25 percent wireless distribution to the PSAPs until a statewide strategic planning process is complete.

Perhaps GeoComm's most important recommendation to the State of Iowa though this process has been the need to develop a statewide strategic plan that provides more comprehensive data to take to the legislature to resolve the funding and budgetary, governance, and operations issues that have been identified.

GeoComm has provided several recommendations that will help the state in the short-term and provide a direction to excellence across the state. Previous recommendations include the increase in wireless surcharge and the removal of wireless cost recovery. Both will increase the State of Iowa E9-1-1 Emergency Communications Fund and the allocation distributed to the county Joint E9-1-1 Service Boards for the provision of 9-1-1 services.

Until a comprehensive plan is developed to clearly identify the current costs for services and the future projected costs associated with improvement of standards and the migration to NG9-1-1, it is difficult to ask the legislature to increase the funding to PSAPs across the state. Anytime the legislature is asked to amend current legislation, it is highly speculative to predict the final outcome.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 3.4 and strategies to mitigate their impact:

1. There is likely to be significant resistance to increasing the wireless fee to $1.00, eliminating cost recovery, and maintaining the current 25 percent distribution to the county Joint E9-1-1 Service Board.
    a. It is critical to keep PSAPs and the county Joint E9-1-1 Service Boards apprised of the potential to cover a larger portion of their costs for service once the planning process is complete.
    b. It is important to remind the local jurisdictions that the increase in the wireless fee automatically increases the local distribution by 54 percent.
    c. It is suggested that the short-term legislative changes include a reference to the planning process to be completed in a timely manner and that the changes are interim.

Long-Term Considerations

When local and state authorities began planning for and implementing E9-1-1 wireline services in the 1980, the primary funding for the system was tied to a user fee for telephone customers served by the wireline service providers or ILECs. The ILECs would include a local service fee or surcharge on the subscriber monthly bill, collect the fee, and remit it to the local authority responsible for the provision of wireline 9-1-1 service. Typically, the same ILEC would contract with the authority for the services and be paid from the surcharge revenues.

When wireless 9-1-1 services began in the 1990s, the funding model was typically applied to the wireless service provider and often times the 9-1-1 authority was at the state level as is the case in Iowa. The wireless services providers collect from subscribers and send the funds to the state to pay for the system. As technology progresses and the emergency communications industry is planning for NG9-1-1 services, alternative funding models have been studied.

The United States Department of Transportation (USDOT) has led the U.S. government effort to define how services will be funded and provided in the NG9-1-1 environment. The FCC has commissioned the CSRIC to consider models and make recommendations for the delivery of services in the new technology environment.

The CSRIC 4B[5] reports states with regards to funding challenges that:

> "The transition to NG9-1-1 will require development of new funding models. Possible models explored by the subgroup include fixed-amount surcharges on calling services, a surcharge on access infrastructure providers, a general statewide communications surcharge, a common federal communications surcharge, and the more traditional use of bonding for capital expenditures. It is expected that a combination of these sources will likely be used to fully fund NG9-1-1 systems."

There are many suggestions for how to fund NG9-1-1 but no consensus on the best model. The CSRIC report acknowledges the difficulty with this and makes the following recommendation:

> "The reader should note that while several concepts on NG9-1-1 funding were discussed in the CSRIC 4B Working Group, there was a lack of consensus on specific recommendations. Consensus was reached on the recommendation that the FCC should encourage the National 9-1-1 Program to convene a Blue Ribbon Panel as soon as possible, to address 9-1-1 funding issues and make recommendations for funding construction and maintenance of NG9-1-1 systems."

The March 2010 *Next Generation 9-1-1 Transition implementation Handbook, A Guide for identifying and Implementing Policies to Enable NG9-1-1*[6] published by the National Emergency Number Association Next Generation Partner Program (NENA NGPP) provides several recommendations to state and local entities planning for the implementation of NG9-1-1. The NG9-1-1 Transition Policy, issue number two, discusses funding the NG9-1-1 system. Some of the recommendations suggested include:

- State and local governments should examine funding, operations, and legislation to ensure they promote the needed ESInets and multi-jurisdictional cooperation, including interstate ESInets and NG9-1-1 in general.
- Any fees assessed on end users or devices of any service with the ability to access 9-1-1 (potentially including fees assessed on network access providers instead of, or in addition to, originating service providers) should be reasonable, equitable, and nondiscriminatory.
- Establish a maximum fee, providing the 9-1-1 authority with the ability to adjust the fee rate based on the cost to provide service.
- State and federal legislation and grant programs should reflect the growing convergence and integration of emergency response technology and agency interaction. State interoperability plans and federal funding in support of them must be for overall Next Generation emergency communications, including NG9-1-1.

[5] http://transition.fcc.gov/pshs/docs/csric/CSRIC-WG4B-Final-Report.pdf

[6] http://www.nena.org/resource/resmgr/ngpp/ng911_transition_policy_impl.pdf

It is important that the State of Iowa, consider alternative funding programs as it continues to move its 9-1-1 technology towards NG9-1-1. As both the CSRIC and NENA documents indicate, there is no clear recommendation for new funding models at this time. It is clear, however, that the NG9-1-1 platform will require more interaction and involvement from both private and public sector organizations and that cost sharing will be necessary. In addition, until a strategic plan is conducted and the future of 9-1-1 in Iowa clearly established, the funding needs will not be known. Once the strategic framework is agreed upon, then determining the funding needs will be possible.

As Iowa considers the development of a statewide Enhanced 9-1-1 strategic plan, it should also consider various alternatives for sharing the costs for future systems, both from a technological and operational perspective and the potential of expanding the services available through the NG9-1-1 network to include both public and private sector emergency service stakeholders.

4 Network

Discussion

The two systems, comprised of three distinct delivery methods deployed in Iowa, are aimed at maintaining both prompt and effective access to 9-1-1. The 99 counties of Iowa currently have responsibility for wireline 9-1-1 with specific emphasis on accessing, delivering, and managing the wireline call from the fixed location point of origin through the network to the Public Safety Answering Point (PSAP) designated as responsible for responding to such 9-1-1 calls within its jurisdiction. The expansion of wireless devices drove deployment of a parallel network to accept, route, and deliver 9-1-1 calls made from wireless devices. The responsibility for answering, processing, and responding to the wireless calls in a particular jurisdiction begins with the designated PSAP. However, the design and management of the network architecture used to transport the wireless call to that local PSAP is the responsibility of the state Enhanced 9-1-1 (E9-1-1) Program.

The individual county Joint E9-1-1 Service Boards and the County Boards support local wireline 9-1-1 service through local 9-1-1 wireline surcharge funds and supplemental general revenue support. The State of Iowa helps to further support 9-1-1 service to its citizens through wireless E9-1-1 surcharge funds and oversight through the state E9-1-1 Program Office in the Iowa Homeland Security and Emergency Management. Although some budget information is provided by the county for the 9-1-1 surcharge revenues, the actual costs of all operational expenditures necessary to run a functional E9-1-1 system are challenging to obtain. GeoComm was able to view the available data and provide a "snapshot" of the funding level the county Joint E9-1-1 Service Board funds provided to the PSAP operation in a given jurisdiction.

The wireline and wireless networks implemented in Iowa are functioning as designed. However, GeoComm finds that the cost of the separate networks is high, and efficiencies are not recognized to the degree that might be possible because of the separation of responsibilities and oversight. From a network perspective, the maintenance of three distinct 9-1-1 call delivery "systems" is inconsistent with the concept of merged services, shared networks, and the broader definition of calls for service as alternate, expanded access to 9-1-1 emergency services continues to evolve. The state E9-1-1 Program Office, however, is addressing this concern by advancing the implementation of Next Generation 9-1-1 (NG9-1-1) services throughout the state.

Analysis of the benefits of one network versus two networks is presented in the table of advantages and disadvantages on the following page.

Advantages of One Network	Disadvantages of One Network
Fewer points of failure	Failures may have more impact on larger populations due to concentrated network - one system serving many; if outage occurs both wireline and wireless affected
More efficient management of network elements	Small state office staff may be challenged to manage entire wireline and wireless network
Network infrastructure cost reductions likely	Migration to a single network at this stage is counter to state Next Generation plan and future goals
Comprehensive oversight of all network elements resident with one entity	County Joint E9-1-1 Service Boards may perceive loss of direct control of local network
Troubleshooting may be less complex	Potential lack of redundancy
Greater potential for cost containment	State consideration of selling the Iowa Communications Network[1], as reported by the ISICS Project Team, raises some potential issues going forward to NG9-1-1

The analysis above, however, does not address the advantages and disadvantages of the two networks existing today and such analysis might be helpful to the discussion. The single wireless state-managed network with a multiplicity of locally managed wireline 9-1-1 networks under the control of local agencies duplicates effort and suggests inefficiency. The table on the following page provides illustration of the advantages and disadvantages of the current bifurcated structure.

[1] The Iowa Communications Network (ICN) is the state fiber optic network. The service is designed to enhance distance learning and provide Iowans with equal access to education and government. The ICN makes it possible for Iowans, physically separated by location, to interact in an efficient, creative, and cost-effective manner. Through partnerships with education, medicine, the judicial system, government agencies, and the National Guard, the Network brings live, full-motion video to over 700 classrooms around Iowa, located in schools, National Guard armories, libraries, hospitals, and federal and state government offices. ICN services include full-motion video, video over IP, voice, data, WAN connections, and high-speed Internet. The ICN provides voice, video, data, WAN connections and Internet via an expansive network of state-owned and leased fiber throughout the state. The state has proposed that Next Generation 9-1-1 services be integrated with the ICN and the fiber already installed and implemented be leveraged for use by emergency communication services. If the ICN were sold, 9-1-1 services or costs might be impacted.

Advantages of Two Networks	Disadvantages of Two Networks
Some level of redundancy for a portion of the state and a portion of the devices used to call 9-1-1	Many points of failure
Simplicity in design; Local wireline systems are usually less complex than statewide systems	Duplication of oversight and network management by state, local Joint E9-1-1 Service Boards and local government
Local control of systems and operations	PSAP jurisdictions are "islands" with little coordination or collaboration between and among locals and state; network infrastructure duplication; call transfer with ANI/ALI is limited to the same selective router
	No comprehensive view of Iowa 9-1-1 System statewide; difficult to determine possible improvement and cost containment potential
	Troubleshooting is duplicated and isolated
	Higher costs

In summary, there are greater efficiencies to be realized with more potential for cost containment and greater opportunities to mitigate risk than exist today with the diverged network infrastructure.

The concept of regionalization of call centers with local dispatch centers is one that is finding favor across the country and merits some consideration in Iowa. However, with the network and governance separation that is present in Iowa, such a move to regionalization may prove to have unmanageable obstacles at the present time. GeoComm finds in our evaluation of the potential for a regional call center concept for the entire State of Iowa that there would be little fiscal or operational advantage to undertake this effort with the existing network. Next Generation 9-1-1 implementation should provide more opportunity to consider a regional approach to 9-1-1 service. There may or may not be advantages to full PSAP/Dispatch consolidation should local agencies decided to study the feasibility of such an endeavor.

Recommendations

Recommendation 4.1: **GeoComm recommends the State of Iowa rapidly advance migration to Next Generation 9-1-1 Services through aggressive implementation.**

GeoComm has identified a number of critical issues within the current wireline 9-1-1 network including numerous single points of failure, a lack of redundancy and insufficient diversity.

In addition, the current wireline 9-1-1 selective routers are not interconnected. GeoComm recommends transition of wireline 9-1-1 to the NG9-1-1 network being implemented over the next several months as soon as is practical. The advantages of this action are:

- Improved system redundancy and backup once all PSAPs are fully connected
- More efficient network management
- More control over network in an unregulated environment

If the State of Iowa does not accept this recommendation, there are significant investments that must be made in order to improve the stability of the wireline 9-1-1 system. However, this action would likely take longer to implement than transitioning PSAPs to NG9-1-1 and would potentially result in stranded investment.

The NG9-1-1 effort may be long and arduous; requiring multiple interagency agreements, political support for modifying legislation, and funding that most likely will not be less than what is being spent today. However, state and county government entities that must make this new system work, on behalf of their constituents, should perhaps focus first on how it should be managed. It will be important to clearly identify all the points that will need to be defined, revised, and re-authorized in order to accomplish the goal, and then set upon a thoughtful plan for achieving those individual objectives that support the larger goal.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 4.1 and strategies to mitigate their impact:

1. Cost to migrate to Next Generation network more rapidly may involve expenditures sooner than the current budget permits
    a. Additional revenue may be realized by implementation of other recommendations in this report which could be used to advance deployment more rapidly

Recommendation 4.2: GeoComm recommends the state provide incentives for rapid migration to Next Generation 9-1-1 services for its citizens.

The state should consider providing incentives to the local jurisdictions to migrate their services to the NG9-1-1 network in the most expeditious way possible.

GeoComm believes that investing money in a system that is already in the stages of replacement is not a reasonable or prudent investment for the state.

Further expense on outmoded network architecture such as employing dual selective routers, implementing inter-tandem connectivity, ensuring diversity throughout the system including the "last mile" from end office to the PSAP, or connecting the existing direct trunked systems (which do not meet current state rules for selective routing) to selective routers is not recommended.

Advancing the migration to NG9-1-1 systems as quickly as possible will have the greatest benefit to improve 9-1-1 service in Iowa. Offering incentives to local PSAPs, by providing funding, implementation assistance, training, guidelines, cooperative purchases or other similar incentives, to move in this direction should have a positive effect on 9-1-1 service in Iowa and help to advance service improvements more rapidly and with less cost to the public.

Obstacles and Mitigation Strategies GeoComm has identified the following obstacles associated with the adoption of Recommendation 4.2 and strategies to mitigate their impact:

1. Providing incentives or funding for desired changes will require funds not presently available
    a. Additional funding may be realized by adopting recommendations related to balancing the wireline and wireless fees and elimination of carrier reimbursement as outlined in the finance section of this document
2. Possible sale of ICN is a concern and the potential impact on next generation services is not understood at this time
    a. The E9-1-1 Communications Council and the state E9-1-1 Program Office should be involved in any and all deliberations related to the potential sale of the ICN in order to protect the future 9-1-1 network
    b. Impact of the sale of the ICN on NG9-1-1 services should be clearly communicated to decision makers, including the financial impact if the ICN is not able to be used for NG9-1-1 services and another network or networks is required

Recommendation 4.3: GeoComm recommends the state develop and adopt more robust and contemporary network standards.

The network service standards currently in the state 9-1-1 statute require updating for newer network components as the state moves toward NG9-1-1 services. In that process, and in conjunction with the recommended strategic plan, additional network service standards should be considered. The state should utilize resources related to industry accepted network infrastructure best practices and should include standards related to:

- Minimum grade of service evaluation on an annual basis through the use of traffic studies and analysis
- Trunk capacity analysis and modification based on reliable statistical data
- Standards related to redundancy and diversity on all critical network components, including conditional or alternate routing

- Continuity of operations collaboration with neighboring communities

The state E9-1-1 Program Office, E9-1-1 telephone service providers, and county Joint E9-1-1 Service Boards and local operating authorities all should employ the best and most affordable technologies and methods available to provide quality E9-1-1 services to the public.
This can best be achieved by establishing standards that direct any future investment and energies toward areas of improved interoperability and service quality.

Obstacles and Mitigation Strategies GeoComm has identified the following obstacles associated with the adoption of Recommendation 4.3 and strategies to mitigate their impact:

1. Perceived loss of local control by local jurisdictions may lead to political ramifications
    a. Engage local jurisdictions in the standards setting process
2. Local control concern related to state mandates without adequate funding
    a. Develop criteria to guide PSAPs
    b. Consider a phased approach to compliance for new standards that require additional cost to the local jurisdiction
    c. Provide incentives or funding for desired changes if immediate compliance is desired

5 PSAP Operations

Discussion

GeoComm spent a considerable amount of time visiting with Public Safety Answering Points (PSAPs) and PSAP personnel in the State of Iowa. Overall, GeoComm is very impressed with the professionalism, dedication, and competency of the personnel providing 9-1-1 services at the local level. During PSAP visits and review of all data collected, GeoComm learned that there is no consistent methodology in place to adequately count 9-1-1 and seven-digit telephone calls, events dispatched, and other performance related data. This inconsistent data makes it extremely difficult to provide a true and reliable assessment on the PSAP environment statewide. While GeoComm's observations indicate some trending, it is difficult to extrapolate to a statewide assessment without consistent comparative data from multiple PSAPs.

In all but the largest agencies, allocated staffing is determined based on the need to cover a minimum number of positions. With so many PSAPs in the state serving small jurisdictions, staffing is determined based on the number of positions or workstations that must be covered on a continual basis, regardless of calls for service or level of dispatch activity.

The most common example is a 9-1-1 call taker or primary law enforcement dispatch position which must always be staffed and ready to deploy law enforcement services. This position must also provide a control point for radio traffic from responder, field-initiated activity even if there is a low call volume for actual calls for service. A similar position may exist for fire and Emergency Medical Services (EMS) related calls, or in many cases, one position handles all or a combination of 9-1-1, law enforcement dispatch, and fire/EMS dispatch.

When not committed to answering incoming 9-1-1 calls or active events requiring radio support, these staff positions assist with ancillary responsibilities, such as jail duties or answering administrative telephone lines, for brief periods of time. However, the actual 9-1-1/radio positions can never be unstaffed – this type of position is classified as a coverage position. Therefore, even the smallest PSAP in Iowa must have a minimum of one position staffed at all times. The decision of moving from this one minimum position to two people on duty in a PSAP is largely subjective in nature and not reliant upon any formal data analysis. Conversely, the PSAPs GeoComm visited that perceive a staffing shortage, had no statistical methodology to support that belief.

GeoComm's analysis revealed that ancillary duties are performed in nearly all PSAPs in the state, and these duties have a direct impact on appropriate staffing levels at the local level. In other words, even if the 9-1-1 call taking or dispatching functions were to be eliminated, most agencies would have considerable ancillary workload remaining.

Iowa statutes require telecommunicators to have 40 hours of initial training and eight hours of recurring training each year. GeoComm found that dispatchers and call takers generally adhere to the minimum requirements. Although the statutory requirement is being met, some agencies report the content of the training being provided is inconsistent. GeoComm did not conduct an independent review of the training curricula and therefore, cannot validate its compliance with industry standards.

As noted above, GeoComm visited several PSAPs where there was one person on duty who had several ancillary duties in addition to call taking and dispatching, including, in some cases, jailer duties. While this situation is not unique to Iowa, GeoComm must note that there are significant risks associated with a single dispatcher on duty. With a limited resource of one person, there are risks associated with insufficient breaks, insufficient supervision, insufficient resource backup in the event of a major incident or multiple calls, etc. All of these situations can degrade the level of service to Iowa citizens and field public safety personnel. There are safety issues that must be considered whenever one person is on duty in a public safety facility, particularly a facility that also houses prisoners. GeoComm classifies one person on duty in a PSAP as a single point of failure with the potential to jeopardize the entire public safety system.

After evaluation of the PSAP workload, GeoComm determined 97 percent of the PSAPs responding to the survey handled ancillary duties in addition to answering 9-1-1 and dispatching public safety units. Although many of the surveys sent to Iowa PSAPs were returned incomplete, almost half of the agencies visited tasked dispatchers with various jail duties that required a solo dispatcher to leave the 9-1-1/radio console unattended.

GeoComm was asked to consider the efficacy of regional call centers with local dispatch centers as part of this study. The result of our evaluation is that there is no financial or operational advantage to creating regional call centers and leaving independent dispatch centers with the existing network and governance structure that is in place in Iowa. There may or may not be significant operational and financial advantage to full PSAP/dispatch consolidation should local agencies decide to study the feasibility of the full consolidation concept.

Recommendation 5.1: GeoComm recommends the E9-1-1 Communications Council create a standardized process to collect workload data for all PSAPs.

Valid workload statistics are required to ensure appropriate resource allocation including equitable distribution of financial assets based on operational need. The State of Iowa desires to have an accurate analysis of the 9-1-1 workload in the state. With the varied methods currently being used to count events in the communications centers along with the inability of some centers to even count events, it is very difficult to accurately analyze the current 9-1-1 environment and make validated resource allocation decisions.

The number of events and ancillary tasks handled in the PSAPs has a direct impact on staffing, operational, technology, and facility needs. The ability to accurately account for, compare, and analyze system operations is essential to effective and efficient management.

The standardized process used to account for activity in the PSAPs should be kept as simple as possible and should include number of 9-1-1 calls received, number of non-emergency and administrative calls received, number of telephone calls placed from the PSAP, total number of dispatched events, total number of field initiated events and the ability to subtotal activity by discipline (law enforcement, fire, EMS, etc.). To the extent possible, automated data tracking systems such as 'peg counters' on telephone lines, Management Information System (MIS) software add-ons to PBX or administrative telephone systems, etc., and MIS add-ons to E9-1-1 customer premise equipment should be used to facilitate such tracking. Manual systems of gathering this data are inherently time consuming and inaccurate.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 5.1 and strategies to mitigate impact:

1. Computer Aided Dispatch (CAD) systems and agency protocols are dramatically diverse.
    a. Leadership is needed at the state level to work with all stakeholders in the development of a consistent data collection and reporting process. There are a variety of software platforms that will assist in the automated collection of consistent call data. PSAPs should agree on the dispatched and field event data that will be collected and reported for comparison and resource allocation purposes.
2. Some PSAPs have no automated systems to count events. This may have to be done manually.
    a. When developing common protocols for data collection, it is important to consider the needs and capabilities of PSAPs without automation. Although efforts must be made to understand the diversity of automated systems, manual systems may not be able to be avoided and must be considered.

Recommendation 5.2: GeoComm recommends that PSAPs use an industry standard process to manage current and future staffing levels.

During GeoComm's analysis, we did not discover use of any industry standard processes to determine appropriate staffing levels in the PSAPs. Without using data driven processes to determine staffing levels, there is little validity to the staffing numbers currently in place or the perception of adequacy. Although staffing levels may seem to be appropriate at many agencies, the current methodology used to determine these levels, if one is employed at all, may not produce accurate results.

The only comprehensive program that is specific to public safety communications centers is the Association of Public Safety Communications Officials (APCO) Project RETAINS Toolkit 2.0.

This program allows agency-specific data to be used in order to determine the number of positions needed for that particular PSAP. One example of formulas used in the program considers factors such as total number of hours per year that an employee is actually available to perform duties in the communications center.

Even though a full-time employee has a potential of 2,080 hours per year, the formulas consider that the employee will be unavailable for scheduling due to vacation, illness, holiday leave, etc., along with hours needed away from the center for training, breaks, etc.

As noted above, there are many PSAPs in the state that have only one dispatcher on duty for some or all shifts which creates risk to the entire public safety system. The risks include exposure to missed calls for assistance, enhanced liability, officer safety concerns, and other service performance issues for the community.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 5.2 and strategies to mitigate impact:

1. There is a lack of accurate data.
    a. In order to use an industry standard staffing tool to its fullest capability, PSAPs must dedicate time and resources to gather accurate data. A staff persons should be assigned administrative duties to collect, manage, and evaluate data within the PSAP environment. Within inaccurate or incomplete data, the result will not appropriately outline the specific staffing needs of the particular PSAP.
2. Cost of industry standard staffing assessments.
    a. Industry standard staffing assessments are available from a variety of sources including a self-assessment tool from APCO. There is a cost involved for the self-assessment tool or various firms that conduct PSAP staffing analysis. Due to the efficiency enhancement to be derived from effectively and accurately setting staffing levels, agencies should budget for the necessary expenditures.
3. Funding for additional staff needed as determined by the industry standard process.
    a. Some agencies may prefer to avoid evidence that additional staff is needed based on the perception that funding is unavailable. Conversely, if an agency perceives it is overstaffed it may avoid a statistical validation. The best strategy to receive additional resource allocation or legislative revenue enhancements, allocations, or authorizations is statistically valid analysis.

Recommendation 5.3: GeoComm recommends that the state required telecommunicator training curriculum be reviewed to ensure it meets industry minimum training standards.

When Iowa legislation was created requiring 40 hours of training, it was based on the original APCO P33 standard. The APCO standard had a requirement of 40 hours of basic training. As the standard has progressed and migrated to the ANSI process, this 40 hour requirement has been eliminated.

The ANSI standard now requires compliance with the training elements, without placing a specific time requirement in the standard itself. The latest version of the standard, however, does require 24 hours of annual recurring training in order to maintain compliance.

The content of the Iowa telecommunicator training legislation should be reevaluated in order to ensure that industry standards are being met.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 5.3 and strategies to mitigate impact:

1. There is a possibility that more than 40 hours of initial training will be required.
    a. The job functions on the front line in the PSAP are very complicated, and it is difficult to place a fixed requirement in the minimum training standards for the number of hours it takes to become proficient. By taking the time to meet the requirements as outlined in the APCO standard, the basic training dispatchers receive will be at a higher level. This requires a shift of thinking from the original 40 hour requirement. Discussions with all stakeholders will help accomplish this.
2. Increasing recurring training from eight to 24 hours will require additional funding at the state and local level.
    a. Continue to offer recurring training online or self-paced.
    b. The new 24 hour requirement will have an impact at the local PSAP level but could be broken out over the entire year and done in a self-paced manner during less busy or down times in the communications center. This can be done with minimal impact on staffing.

Recommendation 5.4: GeoComm recommends each PSAP ensure appropriate minimum staffing levels.

While visiting one PSAP dispatcher on duty, GeoComm observed the 9-1-1 and radio activity level generally did not preclude the dispatcher from handling other duties as assigned. However, unless there are two personnel on duty, the potential liability of leaving the PSAP unstaffed, even for a moment, may outweigh the economic savings. GeoComm strongly cautions against leaving a position vacant that is solely responsible for 9-1-1 telephone calls and/or the public safety radio.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 5.4 and strategies to mitigate their impact:

1. Minimum staffing levels are too low.
    a. Allocate additional funds for increased PSAP staff resulting in a minimum of two people on duty at all times.

b. Evaluate ancillary duties and determine which duties need to remain with PSAP personnel and which might be reassigned for increased operational effectiveness and minimization of risk. Reassign outside duties to other staff members such as patrol officers, civilian jail aides, community service officers, etc.
c. Consider deploying trained community volunteers as dispatcher aides or part-time dispatchers when one dispatcher is on duty to fill in during times when ancillary duties need to be performed.
d. Consider working with adjoining agencies to share resources devoted to housing prisoners, 9-1-1/dispatch, or both.

Recommendation 5.5: GeoComm recommends that PSAPs combine all emergency and non-emergency telephone lines into one console for ease of call processing and efficiency.

Through data collection, interviews, and observations, GeoComm found wireline and wireless 9-1-1 lines appeared seamless to the front line dispatcher. However, with many centers separating their administrative lines onto a physically different telephone system, a multitasking challenge is presented to dispatchers during heavy workload periods. Although it can be an advantage to have a separate telephone system available if the other system is incapacitated, the disadvantages outweigh the advantages due to the more frequent opportunities for multiple simultaneous calls to appear on the separated systems.

GeoComm recommends combining all telephone lines onto one telephone console in order to reduce multitasking and error potential for the dispatcher. When several lines are ringing, the dispatcher must prioritize by ring tone and/or call type. If there are two different telephones ringing on separate sides of the position, public safety responders talking on the radio, and the dispatcher having to keep up with CAD or its equivalent manual record-keeping process, having one telephone system to focus on promotes efficiency and reduces confusion.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 5.5 and strategies to mitigate their impact:

1. Capabilities of the current telephone systems may interfere with integration.
    a. The current administrative telephone system may not be compatible with the 9-1-1 telephone system necessitating the replacement of both with a compatible system
2. High initial cost associated with integrating the two telephone systems.
    a. Seek grants for upgrading to new telephone system that can integrate both telephone systems from outside sources such as from federal agencies.

Recommendation 5.6: GeoComm recommends that local agencies look for synergy with their PSAP neighbors where operationally and financially feasible.

When considering challenges faced in the delivery of public safety services, local agencies and jurisdictions should carefully consider whether there are benefits to working with neighboring agencies to share resources. While full service consolidation is a model that has worked well in many areas, it has also resulted in failure when it is not in the best interest of all parties. Without advocating for consolidation in advance of a full feasibility analysis, GeoComm finds there are almost always potential benefits to working more closely with neighboring jurisdictions and sharing resources.

For agencies that are inclined to study consolidating or regionalizing PSAPs, there may be opportunity for a dramatic positive impact on public safety services. The most significant potential benefits include the PSAPs ability to share resources allowing for the elimination of duplicate costs, supporting coordinated responses, providing greater interoperability, and possibly leading to more effective and efficient service.

As noted, the extent of these benefits will vary depending on the consolidation model selected (e.g. full consolidation of 9-1-1 and dispatch, communications systems, and related technology, partial consolidation, co-location, or a hybrid solution), the existing conditions present within the community, the political environment, and communities' standards for public safety services.

As the public safety industry moves towards Next Generation 9-1-1 (NG9-1-1), agencies will continue to examine the use of inter-agency shared facilities, networks and applications, technologies, staffing, and more in an effort to provide their communities with the latest technologies while considering costs savings for these services.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 5.6 and strategies to mitigate their impact:

1. Local jurisdictions may resist the concept of service, virtual, or functional consolidation.
    a. All stakeholders need to feel a sense of ownership in evaluation of feasibility and participate in any decisions.
    b. All stakeholders should be part of an ultimate governance structure to ensure the needs of their local jurisdiction are appropriately addressed.
2. Feasibility study and implementation planning costs may be difficult for local communities to fund.
    a. Grants may be available for enhanced interoperability that would be achieved through stronger working relationships.
    b. The state may consider "seed money" to encourage feasibility studies.

6 Technology

Discussion

As noted in previous reports, a wide variety of radio equipment is in use across the State of Iowa. The most common radio technology in use by Iowa public safety agencies is VHF (150 MHz) conventional radio followed by UHF (460 MHz) systems. Clearly, the most pressing issue involving this technology is the Federal Communications Commission (FCC) mandate requiring all VHF and UHF public safety systems (below 512 MHz) to transition to narrowband operation by December 31, 2012. As of January 1, 2013, continued operation in wideband will be a violation of federal regulations. Such violation can carry extensive cash forfeiture fines, as well as a direct order to immediately cease operation.[1] The logic behind this regulatory move by the FCC is compelling, in that it is their attempt to make usage of the current radio spectrum below 512 MHz far more efficient by making individual channels more narrow, thereby allowing more space for more (and badly needed) radio channels.

The narrowbanding process creates many challenges for public safety agencies that must be assessed during the planning and implementation process. First, agencies may experience diminished radio performance in narrowbanding operations through reduced volume, increased carrier noise, and sensitive repeater adjustments. Second, interoperability with mutual aid partners will be impacted if the transition is not properly coordinated on a regional level. Many public safety agencies in Iowa have tied their local implementation of narrowbanding to the published state schedule for narrowbanding various regions of state-owned and operated radios. It is imperative that Iowa state agencies and their contractors keep all local and regional agencies informed of any change in schedule, both delays and accelerations.

In addition to the VHF and UHF systems, many public safety agencies in Iowa utilize an 800 MHz system for radio communications. This diversity creates gaps in interoperability. In areas where neighboring agencies use different and incompatible technology, such as a digital 800 MHz system adjacent to an analog VHF system, interoperability requires that multiple radios be carried by responders or that technical gateway devices be implemented to allow cross-system communications. The net result is usually very limited ability to communicate between users of the disparate systems plus the need to use unfamiliar equipment and processes during emergency situations. However, well-planned gateway systems can be implemented which can help make this inter-connection of otherwise incompatible systems relatively simple for field users and dispatchers.

[1] http://transition.fcc.gov/pshs/public-safety-spectrum/narrowbanding.html

Recommendation 6.1: GeoComm recommends that all public safety agencies in Iowa continue the necessary measures to ensure compliance with FCC narrowbanding requirement by January 1, 2013.

Federal regulations requiring narrowbanding of all public safety VHF and UHF radio systems before January 1, 2013 have been widely publicized, and the FCC has noted that it does plan enforcement actions for those that do not meet the requirement. Beyond this requirement is the very real possibility that systems still operating in the wideband mode after this time will create harmful interference and degrade the operation of neighboring agencies that are properly using narrowband technology. For these reasons it is necessary all agencies make every practical effort to become compliant with the narrowband operation regulations.

The State of Iowa and its local public safety agencies have been very pro-active in reaching for this goal. Today the state has a plan and timeline in place, and most local agencies are attempting to stay synchronized with the state plan in their region. Since VHF is the primary band for interoperability that cooperation and synchronization is vital to maintaining interoperability as these systems are narrowbanded.

If the planned dates for conversion to narrowband change, it is important that state agencies and state managers of radio equipment keep their local and regional counterparts well informed. Most local system managers have indicated their understanding of the state plans and their intent to follow the plan timeline for their area.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 6.1 and strategies to mitigate their impact:

1. Cost of implementation and ongoing maintenance costs of narrowband and digital (especially P25) radio systems and equipment.
    a. As the recent efforts to move from wideband to narrowband operations have demonstrated, new radio equipment has a significant price tag. Agencies must be cautious when looking at the lowest cost equipment to ensure purchases are designed for public safety and life-safety services. It may be tempting to purchase similar systems designed primarily for business use and apply them to public safety. Unfortunately the up-front savings often translate into higher long-term maintenance and replacement costs as equipment designed for occasional business use is put into the constant high-intensity use of public safety. Another consideration is the health and safety of the responders using the radio equipment and the citizens they serve.
2. The technological implications of narrowbanding may result in diminished radio system coverage and/or performance. Narrowbanding requires careful and complex planning by public safety agencies which frequently lack the in-house technical expertise to effectively evaluate the impact on system performance. Without a funding mechanism to support transition planning, many agencies tend to budget for a simple one for one radio swap-out transition from wideband operations to narrowband operations without adequately planning for the resulting system changes that may negatively impact their system's performance.

a. For example, a legacy 100 watt wideband VHF base station that was used for paging local volunteer firefighters may have provided "just enough" signal strength to activate pagers in the large manufacturing plant on the north edge of the county, but when replaced by a "swap-out" 100 watt narrow band VHF transmitter intended for the same purpose, the new radio may not provide as much signal strength to inside that plant, and may be less reliable in activating pagers there.
b. The issue of diminished performance can be mitigated by proper transition planning.
c. Additional mitigation of the anticipated coverage loss can often be handled by a thorough review, re-tuning, and replacing of damaged antenna and transmission line systems. In cases where systems have been unattended for several years the simple re-tuning of the transmitters and radios has returned the coverage to its needed range.

Recommendation 6.2: GeoComm recommends that the state ensure that the current VHF conventional analog interoperability frequencies are available to all first responders, and are usable for direct communications to and from all PSAPs.

GeoComm's assessment concludes that progress has been made toward achievement of the goal of providing this capability, with most first responders being able to communicate over VHF channels with surrounding agencies. Most, but not all, are able to use a limited number of VHF interoperability channels. In the immediate term, the various regions and system operators across Iowa should ensure that the current VHF conventional analog interoperability frequencies are available to all first responders, and are usable for direct communications to and from all Public Safety Answering Points (PSAPs), beyond their own jurisdiction. This may be accomplished through the establishment of standardized gateways and patching protocols to connect 800 MHz systems and users to the VHF interoperability channels.

Once this immediate-term recommendation has been implemented, public safety agencies can begin collaboration on more technically complex solutions that will provide greater levels of interoperability. The RACOM system that is currently installed in large sections of the state may provide some short-term interoperability enhancements and should be examined by public safety agencies. Because many public safety agencies currently have the ability to operate on the RACOM system; there may be opportunity for system expansion. Although GeoComm has not assessed the administrative or financial impact of expanding this privately owned system to more agencies, it is reported that RACOM has plans for updates and enhancements to their system in the near future. Therefore, any analysis by the state or regions must be coordinated so that expense and complexity are minimized. Actions such as these would result in Iowa enhancing its overall rating on the SAFECOM Interoperability Continuum.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 6.2 and strategies to mitigate their impact:

1. The use of primary systems that do not provide VHF band capabilities. These include both P25 and proprietary systems in the UHF, 700 MHz and 800 MHz public safety bands.
    a. The use of gateway equipment and crossband repeater systems, either hard-wired or linked by a dispatcher patch, can be installed in systems operating on other radio bands. This will allow users from across the state to access the non-VHF systems.
2. End users in areas with primary systems using other than the VHF band do not necessarily carry a VHF or UHF capable radio.
    a. For those using non-VHF systems as a primary radio operating system there are multi-band mobile and portable radios that will provide access to conventional VHF systems. While relatively expensive they do present a simple solution to the problem.
    b. A second method of providing VHF capabilities to end users is to equip select vehicles or responders with a second radio, built to operate on the VHF band. While public safety radios should be used to provide the appropriate level of reliability and user safety, a very simple unit is useful as a VHF interoperability radio.

Recommendation 6.3: GeoComm recommends that the state adopt P25 as a required state standard.

Some public safety agencies in Iowa have elected to deploy or are considering proprietary digital radio systems. In the United States, the federally-approved open standard for digital public safety communications is the P25 digital radio standard. This standard includes backwards compatibility with legacy analog conventional systems and should be the adopted public safety radio standard for the State of Iowa. While it is not necessary for agencies to immediately activate the digital standard it is important that future radio system implementations, as well as new subscriber radio purchases, be capable of moving to this standard in the future.

GeoComm understands the State of Iowa and the ISICS board have adopted a plan to implement a statewide, proprietary 700/800 MHz public safety radio system for Iowa. Although this system is currently unfunded, GeoComm endorses the long-term goal. Although the ISICS Master Plan encourages the use of "current and proposed standards-based solutions-a narrowband voice and data systems based on APCO Project 25 standards,"[2] by adopting the P25 standard as a requirement and encouraging current purchases to comply with this technology, transition to a statewide public safety radio system will be easier and less costly should adequate funding become available through a legislative or grant process.

[2] ISICS Board Master Plan, September 29, 2009, p. 7

Standards based public safety communications equipment can be more expensive than proprietary equipment. Public safety agencies may resist paying a higher cost for radio equipment particularly when the benefits of the digital interoperability standard are currently unrealized.

Obstacles and Mitigation Strategies

GeoComm has identified the following list of obstacles associated with the adoption of Recommendation 6.3 and strategies to mitigate their impact:

1. There is a significant cost to purchase and install new public safety communications equipment, as well as costs to remove the old equipment and train users. Migration to P25 can be expensive with many modern countywide systems costing over $5 million. When multiplied by the 99 counties of the State of Iowa this cost can overwhelm the financial capabilities of most local entities, particularly if implemented in an uncoordinated approach which will drive cost higher.
    a. Cost mitigation through competitive bidding, careful system design, and planned phasing of upgrades is vital to successfully address the technological needs of public safety users throughout the state. This is true for all technology implementations and especially true for a system that might cover the entire state.
    b. Also, whenever local and/or state governments can come to operating agreements and share the purchase and maintenance of expensive radio system network elements, significant cost savings can be achieved, not to mention the inherent interoperability advantages of a well-planned integrated system. Some other states (Minnesota, Colorado, Ohio, Indiana, and Michigan, to name a few) have embarked on ambitious integrated statewide radio systems to which state and local agencies are subscribers.
    c. Since P25 is an open standard its use allows agencies to use competitive bidding to purchase subscriber radios. This can often help lower the final purchase price.

Recommendation 6.4: GeoComm recommends the ISICS Board pursue funds and establish statewide development of available public safety spectrum.

As noted, the State of Iowa and the ISICS board have adopted a plan to implement a statewide 700/800 MHz public safety radio system for Iowa. While a sustainable funding mechanism has not been established for implementation and operation, long-term plans for interoperability and its associated technology upgrades are crucial to moving forward. If properly planned and executed such a system may eventually provide all agencies throughout the state with a common radio platform, capable of allowing responders to freely roam the state and maintain communications with their home PSAP as well as the local emergency scene command staff.

These longer term and higher cost options include the possibility of leveraging current technologies, such as the 700/800 MHz digital systems presently deployed, into statewide systems with local agencies fully integrated into the communications backbone. An example of such a system already being used is the ARMER radio system in the State of Minnesota.

Another option, which is likely to become a reality in the foreseeable future, is the build-out of a national broadband voice and data system on what is known as the 700 MHz "D-Block." Work has begun on the data side of this system around the country, but there is not yet a viable solution for mission-critical voice usage in this band. Iowa is well positioned with a waiver from the FCC permitting early development in this band. The primary roadblock to moving forward with a broadband system is the high cost involved and lack of adequate funding.

As has been witnessed in most Federal grant programs, agencies that have robust pre-planning are best positioned to receive financial assistance. The ISICS board should develop a long-term migration plan and insure that at any given moment, the next phase is "shovel-ready" so that quick action can be taken as funding opportunities may arise. Each phase of the plan should result in verifiable improvements to interoperability so potential funders achieve measurable objectives and no investments are stranded.

Obstacles and Mitigation Strategies

GeoComm has identified the following list of obstacles associated with the adoption of Recommendation 6.4 and strategies to mitigate their impact:

1. There is no clear financial support for planning, implementation, or operations of a statewide public safety communications system. Current times are a difficult political and economic environment in which to obtain appropriations through the legislative process.
    a. Clear definitions of projects coordinated with a thorough search for appropriate grant funds can help successfully obtain monies for this type project.
    b. Before embarking on the request for information or proposal process a clear and well defined financial package must be developed. This must identify the needed funds, anticipated revenues, anticipated sources, and contingency plans to cover shortfalls and cost increases.
2. Planning and implementation of a statewide public safety radio system is a multi-year process which will require long-term commitments from elected officials and chief executives.
    a. Establishing this commitment in the form of legislative directives, not dependent on individual desires or the future replacement of officials and executives, will help alleviate future uncertainties. These directives can then be developed into both short and long-term plans that can be carried forward.
    b. As has been learned in other state, a critical component to the successful implementation of (and participation in by local entities) such statewide radio systems flows from effectively addressing the thorny question of who owns and controls such a system. In states where local entities are provided meaningful input and participation on planning and governing boards the likelihood of success seems far greater.

Recommendation 6.5: GeoComm recommends that all public safety agencies populate and maintain the CASM tool.

The Communications Assets Survey and Mapping (CASM) is a web-based tool that helps public safety agencies collect and visualize data, and assess interagency interoperability based on the communication assets and interoperability methods that exist.

One of the most important aspects of any interoperability effort is having a clear, accurate, and readily updated inventory of all current capabilities. CASM provides many benefits for public safety agencies, including:

- Single repository for information about land mobile radio systems, methods of interoperability and how they are used by emergency responders
- Means to display the data
- Tools to analyze the data and visualize interoperability gaps in accordance with the SAFECOM Interoperability Continuum framework

To be fully effective all regions and all local agencies must participate in populating the CASM tool with accurate information. Regional planning committees should also make an extended effort to see that once the data is originally entered it is updated on a regular basis.

Obstacles and Mitigation Strategies

GeoComm has identified the following list of obstacles associated with the adoption of Recommendation 6.5 and strategies to mitigate their impact:

1. Collecting inventory information and entering data into the CASM software can be time consuming and require dedicated staff.
    a. The costs of staffing can be mitigated by training a variety of local system users in the skills needed to use CASM. Input and updates can then be regularly entered without the need for special staffing.
2. Data entered into CASM must be regularly updated as assets and resources are dynamic. For example, if a communications gateway device is out of service for repair, CASM should be updated to reflect the asset as unavailable or the response-level benefits of the system are lost.
    a. Updates can be made a part of the system maintenance program, cross checked to ensure that update policies are being followed.
    b. Even where it is not possible to keep the CASM tool fully updated it can be used as a mid to long-term planning tool. In this case the tool requires periodic but not constant updates.
3. Cooperation between agencies will eventually require a series of inter-governmental agreements that determine how systems are shared, when local customs are used to guide operational practices, and when those practices must be governed by more formal agreements.

a. It is often challenging to develop these agreements for multiple jurisdictions and a statewide cooperative effort will be necessary to successfully establish this type of cooperation.

Recommendation 6.6: GeoComm recommends that plans be developed and programs implemented that provide remote dispatch services at the same location as remote 9-1-1 services for each PSAP.

Today most 9-1-1 call routing can be electronically re-routed to another PSAP facility when a circumstance dictates (Example: Tornado knocks the County X PSAP out of service), but that alternate 9-1-1 call answering facility is too often dependent on some remote point for all radio dispatch and monitoring back in the affected jurisdiction.[3] While this may be adequate for a short-term, localized event where a mobile command post and incident commander are in place, anything longer term will be severely hampered by separating dispatch from the location of the PSAP. GeoComm therefore recommends that plans be developed and programs implemented that provide remote dispatch services at the same location as remote 9-1-1 services for each PSAP.

Implementation will involve providing remote control lines and synchronizing console capabilities so that either a dispatcher already working at the backup facility or a dispatcher who has relocated from the affected primary facility can monitor radio traffic and originate transmissions on the remote radio system. Since in most instances the backup PSAP will be too distant from the disabled PSAPs radio system to effectively control it via over-the-air methods, technology such as wireline or microwave links will be required to enable remote radio system operation. Fortunately the advent of IP-based radio systems is making this more practical than in years past.

Obstacles and Mitigation Strategies

GeoComm has identified the following list of obstacles associated with the adoption of Recommendation 6.6 and strategies to mitigate their impact:

1. Attempting to develop additional remote backup for radio systems will require considerable coordination of effort.
    a. To be most cost effective both the primary and remote facility should have nearly identical equipment lists and configurations. As more interconnectivity for backup is developed so will the need for coordinated programming lists, update schedules, and system maintenance.

[3] For example, consider the need to re-route 9-1-1 calls from County X to County Y due to storm damage in County X. Getting the 9-1-1 calls to Y would be pretty easy, but if Y can't transmit on X's radio channels, or if Y's tower is too far away from X's area to get a good enough radio signal back into X's jurisdiction, how would Y then alert and dispatch the fire departments in County X?

   b. The need to freely exchange information will continue to grow as cooperative systems develop.
2. Cost of linking not integrated remote systems is a deterrent to creating this type of standby or backup which may be used rarely or never. The availability of such backup when needed will however be an overwhelming benefit to responders and citizens alike.
   a. Moving to Ethernet (IP-based) systems will lower the cost significantly, eventually bringing it down to something similar to a standard telephone connection.
   b. By way of example, counties in Minnesota which are now full participants in their ARMER statewide 800 MHz trunked radio system have this problem solved, not only for these redundancy needs, but even in cases where "County X" wants to contract with 'County Y" for Y to do X's 9-1-1 call taking and dispatching.
      i. For example, recently Big Stone County, Minnesota (Ortonville on the far Western 'hump' border with South Dakota) wanted to contract with some other county to handle their full dispatching mission. They chose Kandiyohi County (Willmar, 75 miles and two counties away), and radio coverage from Willmar back to Ortonville was no issue, as both entities were subscribers to the statewide ARMER radio system.

7 Interoperability

Discussion

Radio communications interoperability at the local and regional level appears to be well established throughout the State of Iowa. During the study, GeoComm was presented with conflicting anecdotal evidence that, while the technology to provide local and in most cases regional interoperability exists, there are instances where end users are not well experienced in activating those interoperability capabilities. In areas where all the agencies in an entire region operates on VHF (150 MHz) radio channels, the widespread use of channel sharing[1] makes local interoperability as easy and second-nature as daily operations. Furthermore, there are several VHF radio channels set aside by the FCC as interoperability channels that any agency can access, and some of these channels have a long history of major usage by Iowa VHF agencies. On the other hand, where there are mixtures of 800 MHz trunked radio (either digital - P25 *standard or proprietary* – or analog), analog VHF, and 700 MHz systems in place, the ability for a user to readily engage in interoperable communications appears to be relatively low.

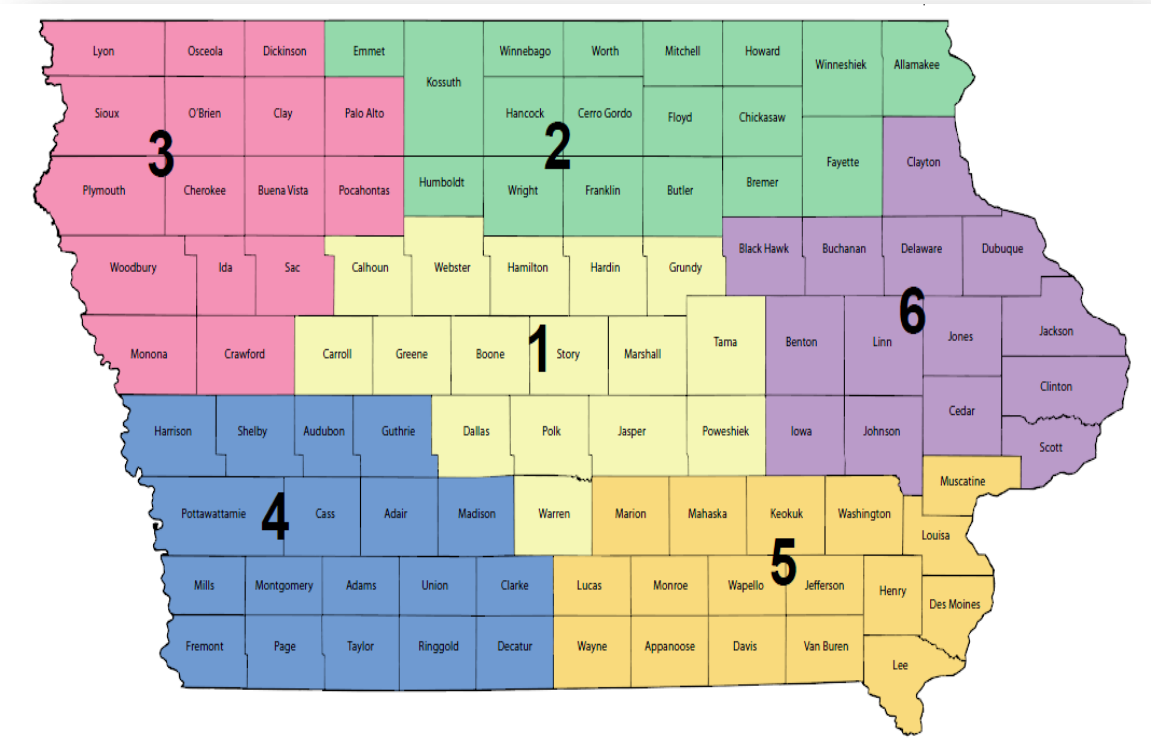
The ability of public safety personnel to communicate across jurisdictional boundaries during large-scale emergencies is one of the most compelling challenges facing public safety agencies in the nation. The situation is no different in Iowa, as personnel from law enforcement, fire, emergency medical service, state and federal agencies are required to communicate with each other in both large-scale and routine situations. The National Emergency Communications Plan defines interoperability as, "The ability of emergency responders to communicate among jurisdictions, disciplines, and levels of government, using a variety of frequency bands, as needed and as authorized." In 2007, Iowa established the Iowa Statewide Interoperable Communications System Board (ISICSB) consisting of members from various regions and public safety agencies with the mission to develop, implement, and oversee policy, operations, and fiscal components of communications interoperability efforts at the state and local level, and coordinate with similar efforts at the federal level, with the ultimate objective of developing and overseeing the operation of a statewide integrated public safety communications interoperability system.

GeoComm's assessment of interoperability capacity in Iowa concludes that good progress has been made toward achievement of the interoperability goal pertaining to technology, with most first responders being able to communicate over VHF channels with surrounding agencies. In order to achieve optimum interoperability, more than simple technological capability must be assessed. As described in the SAFECOM Interoperability Continuum, interoperability must be assessed by examination and evaluation of technology, governance, Standard Operating Procedures (SOPs), training, and system usage.

[1] "Channel sharing" means that Agency A (the XYZ Sheriff) permits Agency B (the ABC Sheriff) to install A's radio channel(s) in B's radios, and vice versa and to talk on them as if both were with the same agency.

In November 2009, the Iowa Statewide Interoperable Communications System Master Plan was adopted by the ISICSB. The interoperable communications system is described as a network of networks serving local and state public safety agencies.

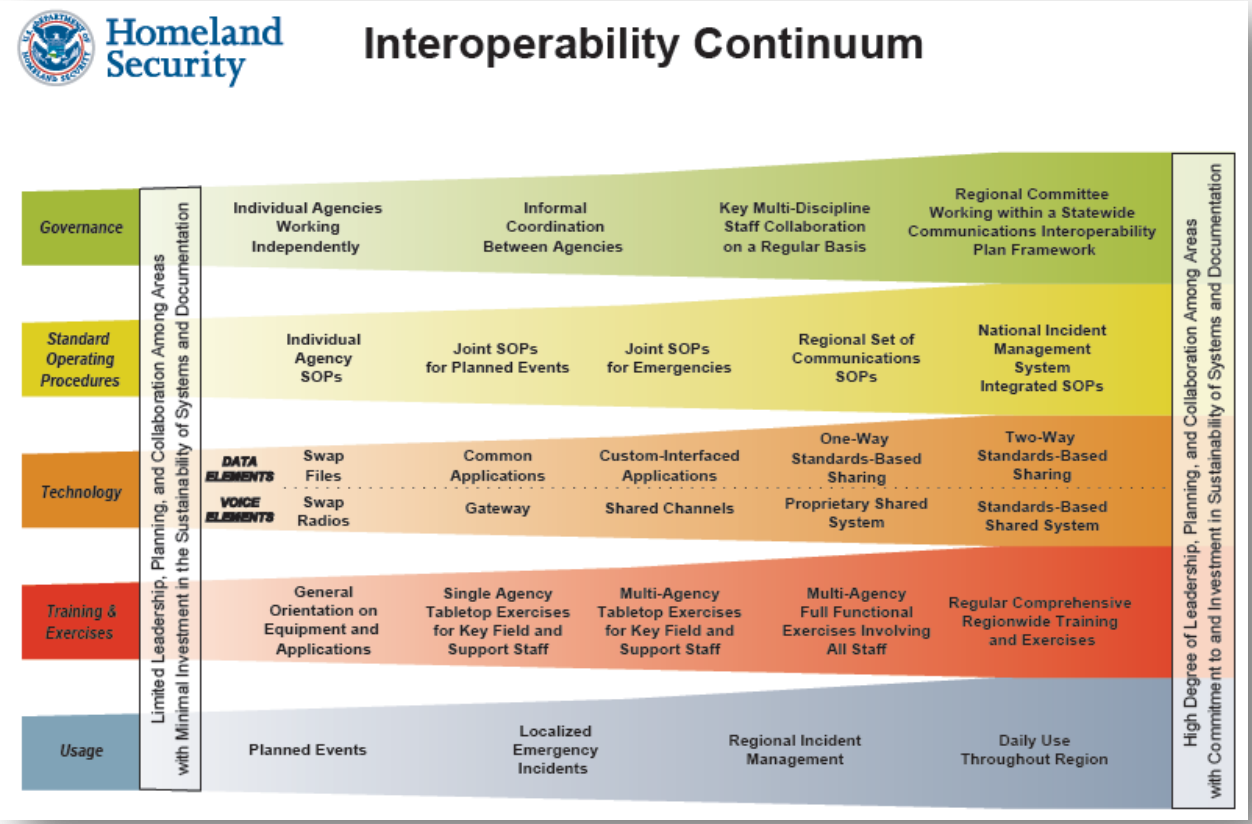
While implementation of the actual network is currently unfunded, much of the interagency tactical communications planning can proceed. The concept of regional planning and coordination has been adopted by Iowa with the formation of six Homeland Security Regions, as follows:



Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
Boone	Allamakee	Buena Vista	Adair	Appanoose	Benton
Calhoun	Bremer	Cherokee	Adams	Davis	Black Hawk
Carroll	Butler	Clay	Audubon	Des Moines	Buchanan
Dallas	Cerro Gordo	Crawford	Cass	Henry	Cedar
Greene	Chickasaw	Dickinson	Clarke	Jefferson	Clayton
Grundy	Emmet	Ida	Decatur	Keokuk	Clinton
Hamilton	Fayette	Lyon	Fremont	Lee	Delaware
Hardin	Floyd	Monona	Guthrie	Louisa	Dubuque
Jasper	Franklin	O'Brien	Harrison	Lucas	Iowa Jackson
Marshall	Hancock	Osceola	Madison	Mahaska	Jackson
Polk	Howard	Palo Alto	Mills	Marion	Johnson
Poweshiek	Humboldt	Plymouth	Montgomery	Monroe	Jones
Story	Kossuth	Pocahontas	Page	Muscatine	Linn
Tama	Mitchell	Sac	Pottawattamie	Van Buren	Scott
Warren	Winnebago	Sioux	Ringgold	Wapello	
Webster	Winneshiek	Woodbury	Shelby	Washington	
	Worth		Taylor	Wayne	
	Wright		Union		

GeoComm finds that there are no wide area interoperability agreements to provide sufficient resources for larger emergencies and currently, planning that is being conducted to achieve the state's interoperability goals lacks uniformity and thus creates some differing levels of end user ability across the state. Interoperability in Iowa involves both technological and operational issues that must be addressed through a coordinated, regional planning process. Interoperability planning requires that jurisdictional boundaries be set aside since the overarching goal is for agencies to operate across those boundaries. This in turn demands that agencies relinquish some control during those situations in order to achieve the benefit of a well-organized and efficient attack on the emergency situation. Although the Statewide Interoperable Communications Plan (SCIP) addresses regional planning, additional progress can be made. Coordination is required to ensure that all participants provide the appropriate service and meet the specific demands of the current situation. In the planning stages, well before any actual emergency, it is often difficult to develop plans and protocols that are sufficiently flexible to cover the various, and often unknown, situations.

The primary goal of the interoperability planning effort should be to benchmark current levels of interoperability and actively move toward level five on the SAFECOM Interoperability Continuum for each identified criteria.



Please note that while the SAFECOM Continuum is often associated with the development of standards-based technology, it also includes daily use of this technology and regular training for all users, as well as a regional and statewide governance structure.

A major focus of any planning or interoperability effort should be achievement of the five goals outlined in the current SCIP. This document was updated in November of 2011, and the goals outlined in that plan closely follow the findings and recommendations of GeoComm. The SCIP is directed toward the activities of the ISICSB, but those same goals can and should be addressed by all affected public safety entities in the state.

The SCIP goals are:[2]

- Development of a successful stakeholder outreach program to educate and obtain support for interoperability initiatives statewide in Iowa
- Fully support Iowa's conversion and compliance with the Federal Communications Commission's (FCC's) narrowbanding mandate deadline of December 31, 2012

[2] Iowa Statewide Communications Interoperability Plan (SCIP) Implementation Report, November 2011

- Successful completion of the ISICSB ten interoperability initiatives in Iowa funded by the expenditure of the Public Safety Interoperable Communications (PSIC) Grant Program funds
- Develop a feasible plan for the build-out of a statewide Wireless Broadband Network (WBN) to complement the ISICS 700 MHz LMR build-out as contained in the ISICSB Master Plan
- Work with Iowa's Governor, its ISICSB legislative members, and the Iowa legislature to secure critically needed funding to implement the ISICS Master Plan and the WBN

Recommendation 7.1: GeoComm recommends that each regional interoperability committee in the State of Iowa aggressively complete multi-agency planning to include development of standard operating procedures for large-scale response.

The regional Interoperability committees should meet regularly; provide the opportunity for full discussion of the current and future state of emergency communications systems within the region; meet with and discuss inter-regional communications with each neighboring Interoperability committee; and provide regular input to the ISICS and any statewide committee charged with the development of statewide plans and interoperability. In addition, the regional interoperability committees should work together to establish standard operating procedures for large-scale, multiple agency events. The committees should participate in coordinating regional training and exercises.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 7.1 and strategies to mitigate their impact:

1. One major obstacle to developing statewide and regional interoperability plans and systems is the common belief that being able to interoperate with nearby neighbors is enough.
    a. While the typical mutual aid situation involves close-proximity responders, the outlook and goal of the SAFECOM program is to develop wider area systems. When agencies need disaster relief assistance it often will come from greater distances than can be expected on a routine basis. It is at those times that having an infrastructure that can be accessed by many agencies as well as common and standardized protocols for operational procedures is most valuable. As an example, in 2008 the Minneapolis, Minnesota police department responded with officers to flooding and disaster relief in Cedar Rapids, Iowa.
2. Leadership roles, often beyond those expected in local Incident Command situations, can create voids in the command structure and lead to difficulties responding to major disasters.
    a. A coordinated planning effort must be structured at the state level so that appropriate leadership is provided to each region. All interoperability plans at the local and regional level should "roll-up" to the statewide interoperability plan.
3. Effective interoperability planning takes a significant amount of time. Many agencies are resource challenged.
    a. Being able to draw on other agencies in emergency situations can enable effective response that is much more effective than can be mounted locally.

Combining planning activities for interoperability with other public safety conferences, meetings, and planning sessions can make efficient use of the limited time available to officials.

Recommendation 7.2: GeoComm recommends the ISICSB and the regional committees work to complete and distribute a statewide interoperability plan working agreement.

This agreement should include both the necessary technology to achieve wide area interoperability as noted in the previous section, and protocols, language, and programming standards that will fully enable that infrastructure. As noted in the SAFECOM Continuum an interoperability plan should be based on national standards, such as the P25 digital standard for technology, and APCO/NENA/NPSTC standards for such things as channel naming convention and operational protocols.

The public safety community in Iowa must develop a standard naming protocol for primary and secondary law enforcement, medical, and fire response radio channels. The goal should be to have any responder be able to call for communications on a specific channel name and all others, regardless of discipline or home-area conventions, understand and use the appropriate channel. As an adjunct to this, common radio programming schemes should be developed so that when exchanging cache radios in an emergency situation primary response channels can be found in approximately the same location on any radio. For example, the National Law Enforcement Emergency Channel (NLEC at 155.475 MHz) is often called MINSEF in Minnesota, ISPERN in Illinois, WISPERN in Wisconsin and Law Mutual Aid in Iowa. Same channel, different names, so imagine the confusion that could occur if an Iowa dispatcher tried to tell a group of responding Illinois officers to "meet up with Iowa units on the Law Mutual Aid channel."

Instituting this commonality of nomenclature (a complete table of nationally recommended common channel names does exist) and programming will allow rapid deployment of assisting resources during emergency situations. It will either eliminate or greatly reduce the need to instruct incoming responders on the specifics of a given emergency scene and provide for a clear transfer of information between agencies of different disciplines (i.e. from fire responders to law enforcement at a given emergency scene).

This entire effort should focus on moving Iowa to level five across the Interoperability Continuum.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 7.2 and strategies to mitigate their impact:

1. Identifying the current national standards and protocols is the first obstacle to be overcome to implement this recommendation. This is closely related to also identifying the differences between operational protocols for various agencies throughout the state.
    a. Resources, such as the APCO and NENA standards as well as NFPA standards are available as a tool to gather national standards.
    b. Local, regional, and statewide protocols must be shared among leaders during regularly scheduled meetings, such as fire chiefs, police chiefs, and emergency manager meetings occurring around the state.
2. Any working agreements or other cross-jurisdictional documents will also meet with the need to be vetted by multiple legal and loss-control departments. The competing desires of various agencies can become an obstacle to the completion and implementation of these agreements.
    a. All language should be developed in an open dialogue between interested parties, with review and approval being a continuous process, rather than something done as a final act.

Recommendation 7.3: GeoComm recommends developing operational protocols that allow standardized interoperability channels on all bands to be utilized for specific traffic on a regular basis.

This includes both the dispatcher to dispatcher 'point-to-point' and the mobile based interoperability and national calling channels. There is also a need for an adequate number of interoperability channels to be developed across the state. Development will need to include the proper protocols to specify how and when these channels are utilized. Care must be taken to keep these channels free of daily "chatter" and reserve them for those times when some level of inter-agency communications is needed. The goal of these protocols should be to create a situation where all users are familiar with the use of the channels through regular use, but do not over-use the interoperability channels for lower priority communications that would be better served via other methods of communications.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 7.3 and strategies to mitigate their impact:

1. Identifying the current national standards and protocols is the first obstacle to be overcome to implement this recommendation. This is closely related to also identifying the differences between operational protocols for various agencies throughout the state.
    a. Resources, such as the APCO and NPSTC standards as well as NFPA standards are available as a tool to gather national standards.
    b. Local, regional, and statewide protocols must be shared among leaders during regularly scheduled meetings, such as fire chiefs, police chiefs, and emergency manager meetings occurring around the state.

2. Any working agreements or other cross-jurisdictional documents may also need to be vetted by legal and risk management officials from the affected agencies.
    a. All language should be developed in an open dialogue between interested parties, with review and approval being a continuous process, rather than something done as a final act.

Recommendation 7.4: GeoComm recommends coordinated regional and statewide training be offered and exercises conducted on a regular basis.

To ensure successful interoperability in the time of emergency, public safety personnel must participate in a uniform program of ongoing training. First responders and PSAP personnel are well schooled in most aspects of emergency preparedness. GeoComm recognizes the efforts of the ISICS Board to coordinate the delivery of regular Communications Unit Leader (COML) training for local agency personnel. One area of relative weakness is that of training to accommodate technology and end users not typically present in the immediate area. While training often involves working with responders from neighboring jurisdictions, GeoComm has found those responders almost universally have multiple local channels programmed into their radios. This may not be the case in a wide area emergency when responders come from distant jurisdictions. In these cases the current situation is to use the very limited shared national calling channels for communications with the incoming responders.

Interoperability exercises must incorporate public safety responders from throughout the region. Statewide exercises should incorporate responders from every region ensuring that responders from each active radio band and system are participants.

Our surveys and interviews also revealed that training sessions for regional and especially wider area emergencies are unequal across the state. Some provide table-top and discussion exercises monthly, others may only have annual exposure to such training. With all the various training schedules, the surveys indicated that limited communications channels or incompatible (not interoperable) radio systems were not generally considered

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 7.4 and strategies to mitigate their impact:

1. While local agencies are very familiar with the type of systems in use within their immediate area there is some difficulty identifying the technology and procedures a responder from out of that area may be using.
    a. Continued updates on the evolution of full interoperability across Iowa will assist local responders in determining the larger communications landscape in the state.
2. Regions and local agencies today often design exercises under very different, usually local, guidelines.

a. Establishing specific statewide and regional guidelines for training and exercises, inspecting plans for adherence to those guidelines, and incorporating those guidelines into state-planned, statewide exercises will help bring all agencies to the same level of training.

Recommendation 7.5: GeoComm recommends that adequate VHF and 800 MHz common channels be allocated to handle wide area emergencies on a statewide basis.

Throughout the state, local agencies are well equipped to interoperate with other nearby agencies. The challenge is to develop a set of statewide frequencies, enough for each discipline (i.e. law enforcement, fire protection, emergency management, medical) to effectively operate at the scene of a wide area event, without the need to exchange radios or re-program to local channels. Every region should be required to develop a regional exercise utilizing these channels on a regular basis. An ideal situation would be for the state to develop a wide area simulated emergency scenario on at least a five-year basis.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 7.5 and strategies to mitigate their impact:

1. The diversity of systems across the state presents a challenge to accomplishing this goal.
    a. Fully populating and strict updating of the CASM database will assist in tracking the needed local systems and channels.
    b. Requirements for regular inventory and channel allocations of all public safety communications systems could provide the necessary records to develop the needed channels.
2. The need for crossband operations complicates developing a large enough number of channels to provide effective large-area event communications
    a. Establishing a common gateway system to serve as a link between VHF and 800 MHz systems could offer both the necessary number of links and a set of common frequencies and operational protocols.[3]

Recommendation 7.6: GeoComm recommends that regular training specifically directed toward interoperability and remote technologies be developed for public safety responders and PSAP personnel.

Through the survey and interview process GeoComm was informed of various levels of training currently offered throughout the state. While training does occur there were issues raised that can be effectively addressed through additional training focus and requirements.

[3] In the Scott County area, for example, where most public safety agencies have been operating on an 800 MHz trunked system for many years, network based devices known as "Linkers" have been implemented which permit a talk group on the 800 MHz trunked system to be referred to as "LEA", for example, and for 800 MHz trunked users to talk on that talk group direct to another agency's units operating on the VHF LEA radio channel.

The type and regularity of training should be well defined and documented. As future planning develops it is important to ensure all areas of the state are included.

GeoComm also encourages that training sessions be expanded to include focus on both PSAP operations and public safety responders. Interoperability training should be a required portion of certification of both PSAPs and local public safety agencies.

Recommendation 7.7: GeoComm recommends that the State of Iowa develop requirements for and conduct emergency communications exercises (including drills, table-top, seminars, and full-scale exercises) on a regular basis.

GeoComm found that while some agencies meet monthly, perform table-top planning sessions quarterly, and mock-disaster drills annually, others have stated that they have not done any exercise or planning within memory.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 7.6 and 7.7 and strategies to mitigate their impact:

1. When training is being developed it will be a challenge to sort through the various standards documents and develop succinct training criteria that meets the appropriate national and state standards. Care must also be taken to ensure that these criteria are sufficiently flexible to encompass changes to those national standards.
    a. One option, taken from the common practice with building codes, is to include national standards on training, such as the APCO-ANSI, NFPA, and CALEA standards by reference in any state or regional standard.

Conclusion

Throughout the survey and interview process GeoComm found a regular use of systems that can interoperate with neighboring systems in the same band. Typically these are either VHF conventional analog radio systems or the RACOM 800 MHz system. The RACOM system has the advantage of being available in some form throughout the state. There is opportunity for improvement in cross-system, wide area interoperability to create the capability of analog systems on one band to communicate with digital systems on another band, or any combination of band/modulation schemes.

Within Iowa, there are instances of close cooperation, such as in the Sioux City area, the Quad Cities, Dubuque, and Des Moines. However, even in these more technically advanced areas, there are dramatically differing views on what can and cannot be accomplished, depending on the agency contacted.

Creating a common understanding among local agencies as to what local, regional, and statewide capabilities exist will in itself enhance interoperability by getting all the system users "on the same page" about capabilities and methods to utilize those capabilities.

The state has implemented tools, such as the CASM inventory tool, and established regional managers to coordinate and encourage its use. The SCIP is being constantly revisited and updated with new and accurate information. These tools are helpful to local emergency managers and other public safety planners. It appears that some additional education, perhaps in the form of practical applications designed around local needs, is needed for these tools to reach their full use potential.

The above recommendations for interoperability are designed to enhance the efforts already underway in Iowa. They do not replace, but rather supplement the ongoing work.

8 GIS

Discussion

In today's world of public safety dispatch, Geographic Information Systems (GIS) are being used for plotting caller locations at the individual work stations in most Public Safety Answering Points (PSAPs). As public safety transitions into Next Generation 9-1-1 (NG9-1-1), the importance of having an accurate GIS increases dramatically. GIS plays a critical role in the validation of location information and routing of 9-1-1 emergencies into the correct PSAP under a NG9-1-1 model. Therefore, the importance of highly accurate GIS data for local and surrounding areas is critical.

The minimum data requirements for public safety GIS data vary with the desired function. The minimum GIS requirement for wireline call plotting is a street centerline map layer with street name and address range attributes, while the minimum requirements for cell phone caller location plotting is a street centerline with possibly street name attributes. If the goal is to plot wireless and wireline call location then the minimum requirements must follow the process with the highest requirements which is the centerline database with name and address ranges and a political or service boundary layer. The address range attributes are required for determining location of the house number on the specific street.

To determine the status of public safety GIS data across the state, GeoComm released a survey with questions focusing on types of GIS data used and maintenance of that data within the PSAP. The survey focused on street centerline and address points that are used for determining an address location and if their current maintenance program meets their needs for public safety. Iowa has a strong GIS environment across the state including parcel mapping. The survey completed for this study showed 96 PSAPs using centerline and more importantly 67 PSAPs having address points. However, the study also determined that 15 counties have not implemented the basic GIS requirements for plotting of wireline 9-1-1 calls which are a street centerline with required attributes. GeoComm found there appears to be a variation in available GIS data across the state.

The Iowa Department of Transportation (DOT) has a GIS clearinghouse for GIS data (http://www.iowadot.gov/gis/downloads/zipped_files/GIMS_History/). GeoComm reviewed the website and a sample of data downloaded for Wright County. Extensive road centerline data appears to exist for this example county. However the attributes tied to the street segments appear to relate to Iowa DOT information, with the exception of a field called "NINEONEONE." This field appears to contain the 9-1-1 street names. No address ranges could be found in the sample street layers. This data is very important and provides the basis for development of address ranges for those counties that are currently not using centerline data.

This Iowa DOT dataset contains the functionality necessary for the plotting of wireless 9-1-1 calls but address ranges would be required for its use in locating and plotting wireline calls in a GIS base map.

Another important factor when discussing GIS data for public safety is the condition or accuracy of the data. A synchronization study was conducted for three urban and three rural areas to determine the condition of the GIS data. The study results showed centerline synchronization levels in the 90 percent range in the sample areas with a single study area, Black Hawk County, having a synchronization level of 42 percent. Black Hawk County accuracy levels were less than half the other study areas. Significant work needs to be done to bring Black Hawk County up to public safety standards for call location and Next Generation functions. The analysis study covered six sample of location. It should also be noted that the statewide survey showed that 96 PSAPs are currently using GIS data, but no analysis work has been completed to determine the accuracy levels of that data in most of the counties. It is GeoComm's opinion that pockets of bad or non-extant data exist in the state. NG9-1-1 requires accurate GIS data; therefore, additional work should be completed to prepare Iowa for moving forward into NG9-1-1 services

Recommendations

Recommendation 8.1: GeoComm recommends the state develop and sponsor a workshop series to bring together and educate GIS and public safety personnel.

Currently 9-1-1 Master Street Address Guide (MSAG)[1] maintenance (adding streets when developed, extending address ranges, etc.) is typically handled by local public safety personnel (often with the local Joint Powers Board). As the MSAG is being merged into the GIS data for NG9-1-1, it is critical that local GIS and public safety personnel are educated as to how GIS is used in the dispatch center today and in the future NG9-1-1 system. A series of workshops, perhaps setup regionally as well as during the state NENA/APCO conference, can bring GIS and public safety personnel together. The workshops should concentrate on the future path for public safety in Iowa, possible guideline development, national standards like those from NENA, synchronization testing, and data cleanup. The workshops can also be used to facilitate and validate information gathering for Recommendation 8.2.

[1] The MSAG is an early 9-1-1 data system wherein a data table is used to identify each and every valid street name, along with the appropriate high and low, odd and even address ranges on that street, and then tying a given address within these ranges to a specific PSAP to which a call from that address should be routed, and then tying specific law, fire and EMS agencies to responsibility for that address. It presumes that a query of it will be using a street address, hence its **inapplicability** to wireless 9-1-1 call routing.

GeoComm recommends that workshops be no more than three to four hours in length and include an overview of GIS functionality for public safety. It has been GeoComm's experience that having GIS and public safety people together in a workshop facilitates an understanding of work that benefits both areas. If GIS personnel could be responsible for data going into the Next Generation system it is important to begin discussing possible obstacles.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 8.1 and recommendations to mitigate their impact:

1. Local GIS departments unwilling to participate in new requirements
2. Low participation in scheduled workshops
3. Distrust between local and state governments
4. Funding and personnel shortages for workshop organization and development

While there are identified obstacles associated with the adoption of Recommendation 8.1, there can also be strategies mitigate their impact:

1. Schedule workshop around 10 a.m. to 2 p.m. to allow for same-day travel.
2. Target GIS personnel with the workshop invitations
3. If possible have workshop be joint effort between State 9-1-1 and State GIS Department or organizations
4. Educate GIS personnel on public safety basic needs today and for NG9-1-1
5. State 9-1-1 attend State GIS organizations

Recommendation 8.2: GeoComm recommends the State of Iowa determine the accuracy of existing local GIS data and confirm areas where data may not exist.

The GIS portion of this study could be described as Phase 1 of GIS data evaluation. This GIS data evaluation involved a breakdown of available data being used in public safety which was determined through survey responses and other resources. A data sample was reviewed for accuracy or synchronization levels.

Since GIS plays such an important role in NG9-1-1, the state must begin to determine the accuracy levels of the report data and verify what data still requires development. GeoComm recommends a phased approach to identify and resolve GIS issues:

- Phase One – Obtain a general understanding of GIS data for the state (has been completed and is documented within this report)

- Phase Two – Develop a high confidence level matrix outlining the status of GIS data by county/municipality. The state should perform a review of all available GIS resources to determine confidence levels in the reported information. One example of resource review may be to look for areas that have changed their response between surveys. The locations in question should be contacted individually to verify the information they supplied.
- Phase Three – Determine the synchronization level of all GIS data across the state. Individual analysis of each county dataset should be performed. The detailed analysis should follow NENA standards as outlined in Synchronizing GIS with MSAG and ALI found on the NENA website as document 71-501, approved September 8, 2009.
- Phase Four – Bring all counties up to the minimum standards for public safety. These standards should include a street centerline with MSAG valid street name and address ranges.
- Phase Five – Monitor data cleanup to achieve a synchronization standard acceptable to the state

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 8.2 and recommendations to mitigate their impact:

1. Distrust between local and state governments for survey responses
2. Funding and personnel to create a matrix of data availability using past surveys and other resources
3. Funding and personnel to determine accuracy levels through analysis reports for unknown areas
4. Funding, personnel and local participation to bring data up to NG9-1-1 standards

While there are identified obstacles associated with the adoption of Recommendation 8.2, there can also be strategies to mitigate their impact:

1. Workshops can help open lines of communication between local and state agencies
2. Provide grant programs for analysis reports and correction to bring synchronization up to state recommendations
3. Outline local benefits of synchronization within the current 9-1-1 systems
    a. Increase call plotting percentages within PSAP today
    b. Increase in accuracy of wireline call locations

Recommendation 8.3: GeoComm recommends development of a statewide GIS data model that includes the Next Generation database standards.

As Iowa moves forward into the NG9-1-1 world, GIS data will replace the MSAG. Just as NENA has developed the MSAG standards that exist today, it is finalizing GIS data model standards. The standard is currently in the workgroup phase but will possibly be released for public review within the next six months. GeoComm recommends that the state lead the way in the development of a statewide data model that reflects the requirements for Next Generation functionality.

It will be important to obtain local feedback when developing the guidelines. The GIS community in Iowa should be educated on the functionality and requirements of GIS data layers for public safety through workshops discussed in Recommendation 8.1 and possibly through other GIS organizations in the state.

The guidelines should include the following:

- Required data layers and attribute fields
- Requirements representing spatial and attribute development
- Development criteria for address points
  - How multi-unit structures should be represented
  - Where points should be placed with respect to building location
  - Standards for secondary address information such as suites, apt, building, etc.
- Minimum criteria for a maintenance program

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 8.3 and recommendations to mitigate their impact:

1. GIS departments see a separation between GIS and public safety
2. Local GIS departments view new model as having to change their local data structure
3. Distrust between local and state governments
4. Funding and personnel shortages for organizing development of statewide recommendations

While there are identified obstacles associated with the adoption of Recommendation 8.3, there can also be strategies to mitigate their impact:

1. Provide workshop to educate GIs and public safety personnel
2. Target GIS personnel with the workshop invitations
3. If possible have workshop be joint effort between State 9-1-1 and State GIS Department or organizations
4. Educate GIS personnel on public safety basic needs today and for NG9-1-1through workshops and support materials
5. Emphasize the model will provide flexibility for agencies to still maintain local data structure; these will be additional fields for transfer into public safety

9 Legislation

Discussion

As discussed in the Governance recommendations, it is GeoComm's finding that a comprehensive strategic plan is essential for Iowa to advance the state's 9-1-1 service in the most efficient and effectual way. The requirement for a strategic planning process will provide the legislature (along with the state Enhanced 9-1-1 (E9-1-1) Program Office and the E9-1-1 Communications Council) the direction and roadmap that the Iowa public safety community has developed. The strategic planning process will also demonstrate to legislators that the entire public safety community is working together to achieve a consistent and high quality level of 9-1-1 service for Iowans and visitors. The strategic plan will provide clear direction and useful planning tools to ensure that the public funds are administered and utilized in a proficient and coordinated manner.

Along with its present advisory role, the E9-1-1 Communications Council can be of additional assistance to the state E9-1-1 Program Office if it is utilized to address the functions suggested in the governance recommendations section of this report. The enhanced and specified role of the E9-1-1 Communications Council can support the state and Public Safety Answering Points (PSAPs) by carrying out the elements of the strategic plan.

In the past legislative session, the state E9-1-1 Program Office proposed legislative modifications to update the language in the legislation to bring the law related to E9-1-1 service more in line with current technology and regulations. The proposed modifications were not enacted. This proposed legislation is important for three reasons. First, the proposed changes are necessary to the state's ability to move forward with Next Generation 9-1-1 (NG9-1-1) services by updating language and correcting outdated technical references which will allow the state to use 9-1-1 funding for the elements and components of NG9-1-1 services. The second reason why pursuit of the proposed modifications is important to the state and local PSAPs is that the changes sought to broaden the use of 9-1-1 surcharge funds to include enhanced services such as mass notification systems, and to better prepare the state for coordination of large scale events. Finally, the legislative initiative sought to equalize surcharge revenues for all communications service types, making surcharges competitively neutral, and to eliminate wireless carrier reimbursement no longer required by the Federal Communications Commission (FCC). This change could help to provide additional funding for E9-1-1 enhancements. At the same time, changes to regulations such as the 9-1-1 General Exchange Tariff may be necessary. The state should work in concert on both the legislative changes and with the Iowa Utilities Board to modify and update the tariff, seeking whatever changes may be determined to be necessary, to allow use of 9-1-1 funds for purchase of the required elements and components of NG9-1-1 service.

In addition to legislative changes necessary to advance E9-1-1 services in the State of Iowa, GeoComm has found that the lack of standards for both network infrastructure, PSAP training and PSAP operations causes E9-1-1 service to be inconsistent and unequal within the state. Because no standards exist related to PSAP criteria such as staffing, emergency medical dispatch, or minimum initial or ongoing training of call takers and dispatchers, citizens receive different levels of 9-1-1 service throughout the state. Standards can assist a state or local entity in establishing a minimum service threshold and ensuring consistent service and capabilities throughout the state for all citizens and visitors. Standards, if they are complied with, can also mitigate risk.

GeoComm further found that the county Joint E9-1-1 Service Plans required by statute are outdated and lacking in detailed information about the current configuration of local 9-1-1 systems. The 9-1-1 Plan requirement was meant to provide the state E9-1-1 Program Office with the information necessary to carry out its required mission of administration of the state E9-1-1 Program as set forth in Iowa Code. The Joint E9-1-1 Service Board 9-1-1 Plan format and requirements will have to be updated to include the components and requirements of Next Generation services. As a part of this update the process for keeping the Plans current should be clarified.

The State of Iowa Code currently allocates "twenty-one percent of the total amount of the wireless surcharge to wireless carriers to recover their costs to deliver E9-1-1 phase I services."[1] The Code further states that "the program manager shall reimburse wireline carriers for the eligible expense for transport costs between the selective router and the PSAPs related to the delivery of wireless E9-1-1 Phase I services." The Code was written at the time when such cost recovery was a required element of implementing service as stated by FCC ruling. The opportunity for wireless carriers to "recover their costs" is no longer required by the FCC. This is a significant cost to the state E9-1-1 Program, using funds that could be used for more appropriate and necessary expenses such as providing PSAPs with incentives to migrate to NG9-1-1 services or provide additional support to local agencies. Twenty-one percent of the E9-1-1 wireless surcharge revenue generates just under $1 million dollars per year for the state E9-1-1 Program. There may be political opposition from small regional wireless carriers to the abolition of this practice as it is costly for the carrier to provide wireless services in rural areas. There may also be opposition from other carriers, the local exchange carrier, and the Automatic Location Identification (ALI) database provider. However, the FCC has rightly acknowledged that the carriers and providers have other mechanisms with which to obtain revenue, such as fees charged to their subscribers, and the cost reimbursement from the state or local governments is no longer a legitimate requirement.

[1] Iowa Code, Chapter 34.7A

The intent of the following list of recommendations is to provide a summary of the legislative action that would be required in order to enact the recommendations found in the Governance and Funding sections of this document. While the Governance or Funding recommendation is addresses the specific issue, the recommendations contained here specify what action in legislation might be necessary to enact the requirement or change.

Recommendations

Recommendation 9.1: GeoComm recommends that the State of Iowa statute be amended to establish requirements for the E9-1-1 Communications Council to conduct a statewide 9-1-1 strategic planning process.

Governance Recommendation 2.1 calls for the State of Iowa to develop a collaborative statewide 9-1-1 strategic plan. GeoComm further recommends that the requirement for a statewide 9-1-1 strategic plan be written into statute. The eligible participants in the strategic planning process should be defined and all interested parties and stakeholders should be allowed to participate. The strategic plan should seek to develop a comprehensive direction, as defined by the stakeholders, for state 9-1-1 services. An annual report to the legislature and review of the plan should also be required. This requirement should ensure that policy makers are kept informed of the status of the state's 9-1-1 system and should also help to ensure that all parties involved in 9-1-1 are working in a coordinated approach.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 9.1 and strategies to mitigate their impact:

1. Understanding of future needs should be communicated adequately to policy makers
    a. Educate policy makers on needs by working with legislative aides and staff
    b. Hold a workshop for legislative staff to inform and educate them prior to introduction of legislation
    c. Focus on the needs of the public and the changing technology

2. Local jurisdictions may perceive loss of control to state authority
    a. If local PSAPs are part of the process and have involvement in deciding their future, they become the advocates for change
    b. Be inclusive in process
    c. Utilize organizations such as NENA and APCO, ISICS Board, and E9-1-1 Communications Council to help educate and involve local authorities

Recommendation 9.2: GeoComm recommends that the state 9-1-1 statute be amended to clarify the E9-1-1 Communications Council roles and responsibilities and to assign the Council the authority to carry out the statewide 9-1-1 strategic plan.

Governance Recommendation 2.2 suggests that the involvement, authority, and function of the E9-1-1 Council be enhanced. Should that recommendation be accepted, the roles, responsibilities, and duties of the E9-1-1 Communications Council recommended in the Governance section of this report should be outlined in statute or administrative rules, specifically giving the Council approval authority for some aspects of its responsibilities.

Presently, the E9-1-1 Communications Council's role is broadly described in statute as advisory. GeoComm recommends that more specificity on the oversight and accountabilities required of the E9-1-1 Communications Council be outlined and clarified in policy.

It is recommended that at a minimum, the E9-1-1 Communications Council should be responsible for:

- Approving annual updates to Joint E9-1-1 Service Board Plan submissions
- Approving grant awards
- Conducting the annual review and periodic update of the statewide 9-1-1 strategic plan
- Recommending the adoption of standards. Because standards exist in legislation today, it is likely that any future enhancements to standards as recommended in this report will also need to be codified in statute, such as the recommendation to ensure the state training programs meet industry standards. The E9-1-1 Communications Council should be responsible for establishing and recommending those standards requirements to the legislature. Once established and adopted, administrative rules should be written to interpret the legislative intent and to provide direction to the state E9-1-1 Program Office, the E9-1-1 Communications Council, the Joint E9-1-1 Service Councils, and public safety agencies.
- Recommending legislative changes pertaining to the state E9-1-1 Program in Iowa
- Ensuring standards compliance by the state and local agencies

Statute language should be amended to clarify the enhanced role of the E9-1-1 Communications Council.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 9.2 and strategies to mitigate their impact:

1. Legislative action is difficult and often lengthy
    a. Begin the process early
    b. Start advocacy and education efforts early
    c. Do not underestimate how long legislative activities take

Recommendation 9.3: GeoComm recommends that the proposed statute language not enacted in the previous legislative session be re-proposed in order to align the statute with Next Generation 9-1-1 implementation requirements.

GeoComm recommends the state E9-1-1 Program Office re-propose the legislative modifications that were not enacted in the last legislative session. The draft language modifications were designed to update the language in the legislation in order to bring the law related to E9-1-1 service more in line with current technology and regulations. These changes are essential to ensure the advancement of NG9-1-1 services as well as to provide additional revenue for the state and local PSAPs.

The changes also would enable the state to take advantage of the flexibility now available to states regarding wireless carrier cost recovery under recent FCC rulings. In addition, if the GeoComm Funding Recommendation related to establishing a competitively neutral 9-1-1 surcharge rate is accepted, the language related to the new rate will have to be updated in statute.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 9.3 and strategies to mitigate their impact:

1. Resistance to change
    a. Engage a champion at the policy maker level
    b. Work with legislative staff to solicit support
    c. Provide necessary documentation and information to fully apprise legislators of the issues

2. Legislative and rule changes are often time consuming and difficult
    a. Begin the process early
    b. Start advocacy and education efforts early
    c. Do not underestimate how long legislative activities take

Recommendation 9.4: GeoComm recommends that if the State of Iowa establishes standards for the efficient and effective delivery of 9-1-1 services, those standards should be codified in statute.

If GeoComm's recommendation that standards be adopted for the Iowa 9-1-1 system is accepted (Governance Recommendation 2.3), those standards and the process for establishing the standards should be addressed directly in the statute. Legislation should establish the requirement for standards. Once standards are determined they should be written in administrative rules and compliance with the standards and should be required in order to receive 9-1-1 distributions or any state grant funding.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 9.4 and strategies to mitigate their impact:

1. Public perception is that all is okay with 9-1-1; to commence discussion that suggests anything different may undermine public confidence in the system
    a. Carefully craft public information about the process to focus on the positive and describe (or list) improvements needed to carry the state forward into Next Generation services.

Recommendation 9.5: GeoComm recommends that once the State Attorney General's opinion on requirements for maintaining an E9-1-1 Service Plan is received, that those requirements, be clarified as necessary in statute or administrative rules.

Governance Recommendation 2.5 states that the 9-1-1 Program Office and the E9-1-1 Communications Council should seek an opinion from the Attorney General on the requirements of 9-1-1 Service Plans. The 9-1-1 Plan requirements including what should be incorporated into the plan, definitions of required elements, necessary statistical information, and direction on the appropriate 9-1-1 Plan process and whatever is determined to be applicable and necessary through the strategic planning process should be developed and communicated to the local Joint E9-1-1 Service Boards and codified in statute or administrative rules.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 9.5 and strategies to mitigate their impact:

1. County Joint E9-1-1 Service Boards may perceive additional requirements as onerous
    a. Keep local authorities informed of the status of the Attorney General's review
    b. Share all information from the Attorney General's office to ensure full disclosure of the review

Recommendation 9.6: GeoComm recommends that if the recommendation to eliminate carrier reimbursement is accepted (Funding Recommendation 3.3) is accepted, that those funds be directed for support of strategic planning, revitalization of the grant program to provide incentives for migration to Next Generation 9-1-1 service and for funding the enhanced activities of the E9-1-1 Communications Council especially that of establishing and maintaining 9-1-1 standards.

If GeoComm's Funding Recommendation 3.3 to eliminate carrier reimbursement is accepted, legislative changes will be required to eliminate this requirement from statute along with the process for distribution of those funds. The recommendations related to the strategic plan would help to direct the appropriate use of the former carrier reimbursement funds in the long-term.

In the short-term, GeoComm recommends that these funds be used to conduct the strategic planning process, to carry out the direction of the strategic plan especially as it relates to the establishment of standards, to reinitiate the grant program to provide incentives and assist PSAPs with transition to NG9-1-1 services as expeditiously as possible.

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 9.6 and strategies to mitigate their impact:

1. Lack of resources at the state program level
    a. Additional responsibilities recommended in this report and the additional tasks required with the NG9-1-1 services could possibly be funded by revenue from elimination of carrier reimbursement

2. There may be wireless carrier and 9-1-1 Provider resistance to elimination of cost recovery
    a. Ensure legislators are fully informed of the potential ramifications
    b. Consider meeting with carriers and providers to explain rationale for seeking a change
    c. Find out carrier objections so that arguments and counter proposals can be prepared for legislators
    d. Take issue to the press if necessary

Recommendation 9.7: GeoComm recommends that the State of Iowa modify the wireless surcharge rate to be competitively neutral with the majority of wireline surcharge rates in the state (Funding Recommendation 3.2) and that further evaluation of equalizing wireline surcharge rates among all communities in Iowa be conducted as part of the strategic planning process. If these recommendations are accepted, legislative changes will be required.

Currently, 80 percent of the counties in Iowa have established their wireline surcharge rate at $1.00. The wireless surcharge rate, however, is $0.65. This disparity in surcharge rates between services creates an unequal and competitive advantage for wireless services.

The FCC Communications Security, Reliability and Interoperability Council (CSRIC) commissioned an evaluation study of issues related to the transition to NG9-1-1. The Funding Focus Group report, issued March 2011, stated that "While all current and anticipated funding methods present collection challenges, a principle that should be applied to any future 9-1-1 funding mechanism is that it should be technologically and competitively neutral."

All service providers, both traditional and non-traditional should be viewed as equal with regard to 9-1-1 surcharges. No one service should be collecting more than its competitors and no one technology should be responsible for collecting all of the surcharge fees.

All communications providers and those who provide access to 9-1-1 should collect and remit the same amount, whatever is deemed to be appropriate in that community, to the 9-1-1 Authority."[2]

If the recommendation to modify the wireless surcharge rate to a level that is competitively neutral with 80 percent of the wireline surcharge rate in the state is accepted, the rate will have to be adjusted in the statute.

In addition, as part of the strategic planning process, the E9-1-1 Communications Council should review all wireline 9-1-1 surcharge rates throughout the state to determine if a balancing of wireline surcharge rates should be encouraged.

[2] FCC, Communications Security, Reliability and Interoperability Council, Working Group 4B, Transition to Next Generation, 9-1-1, Final Report, March, 2011, section 5.1.3.1.9, Competitively Neutral Mechanisms, p 95

Obstacles and Mitigation Strategies

GeoComm has identified the following obstacles associated with the adoption of Recommendation 9.7 and strategies to mitigate their impact:

1. Political unwillingness to increase any fees; additional funding may be difficult to obtain
    a. Engage a champion at the policy maker level
    b. Work with legislative staff to solicit support
2. Legislative and rule changes are often time consuming and difficult
    a. Inform and educate a cadre of advocates such as the membership of public safety professional associations who might benefit from the changes to the legislation
    b. Make sure the legislative process is well known and understood by the advocates
3. Distrust between local and state government
    a. Work with state professional associations such as State Sheriff's Association, Chiefs of Police, association of Iowa counties, APCO and NENA to inform the memberships of the need for the legislative changes and the benefit to local PSAPs
4. Lack of resources at the state program level can hinder legislative efforts due to the time it takes to shepherd legislation
    a. It may be necessary to consider hiring additional temporary staff to assist the E9-1-1 Program Office with the increased duties

10 Recommendations Summary

GeoComm recommendations are provided in a summarized list as either short-term or long-term achievable goals. It is often helpful to categorize recommendations and goals which can be accomplished in the short-term and to separate those which will require more time and effort. In many cases, long-term recommendations, by their nature, can only be accomplished following a short-term goal, or which are planned to follow, after the short-term goals are accomplished. For example, many of the recommendations will flow from the completion of a strategic planning process and the development of a strategic plan. Once the strategic plan establishes the roadmap for the state, other short-term or long-term recommendations can be addressed. GeoComm believes that focusing on the near term recommendations and realizing some early achievements, a record of success and accomplishment for the state can be built and a clear path, established by the strategic planning effort, can be demonstrated. Such an effort will, in and of itself, be strategic and systematic.

The longer term recommendations require more study or discussion among the stakeholders and interested parties and will generally not be achievable in the short-term. The long-term recommendations also require the completion of the strategic plan. It is the strategic plan that will drive how the longer term recommendations can be accomplished.

Short-Term Recommendations

Section 2: Governance Recommendations

2.1: GeoComm recommends the State of Iowa develop a comprehensive and collaborative statewide 9-1-1 strategic plan. (page 2-3)
2.2**:** GeoComm recommends the State of Iowa enhance the involvement, authority, and function of E9-1-1 Communications Council. (page 2-5)
2.5: GeoComm recommends that the state E9-1-1 Program Office and the E9-1-1 Communications Council seek the State Attorney General's Opinion on statute language related to requirements for maintaining an E9-1-1 Service Plan. (page 2-10)

Section 3: Funding Recommendations

3.2: GeoComm recommends that the state equalize the 9-1-1 surcharge fees for any device that can access the 9-1-1 system and provide a means for audit and accountability. (page 3-4)
3.3: GeoComm recommends that the state E9-1-1 Program Office propose a change to the Iowa 9-1-1 statute to remove the required reimbursement (cost recovery) to wireless service providers. (page 3-5)

Section 4: Network Recommendations

4.2: GeoComm recommends the state provide incentives for rapid migration to Next Generation 9-1-1 services for its citizens. (page 4-4)

Section 5: PSAP Operations Recommendations

5.1: GeoComm recommends the E9-1-1 Communications Council create a standardized process to collect workload data for all PSAPs. (page 5-2) *Short-term if considering consolidation, otherwise long-term.*

5.2: GeoComm recommends that PSAPs use an industry standard process to manage current and future staffing levels. (page 5-3)

5.3: GeoComm recommends that the state required telecommunicator training curriculum be reviewed to ensure it meets industry minimum training standards. (page 5-4)

5.6: GeoComm recommends that local agencies look for synergy with their PSAP neighbors where operationally and financially feasible. (page 5-7)

Section 6: Technology Recommendations

6.1: GeoComm recommends that all public safety agencies in Iowa continue the necessary measures to ensure compliance with FCC narrowbanding requirement by January 1, 2013. (page 6-2)

6.2: GeoComm recommends that the state ensure that the current VHF conventional analog interoperability frequencies are available to all first responders, and are usable for direct communications to and from all PSAPs. (page 6-3)

6.3: GeoComm recommends that the state adopt P25 as a required state standard. (page 6-4)

6.5: GeoComm recommends that all public safety agencies populate and maintain the CASM tool. (page 6-7)

Section 7: Interoperability Recommendations

7.1: GeoComm recommends that each regional interoperability committee in the State of Iowa aggressively complete multi-agency planning to include development of standard operating procedures for large-scale response. (page 7-5)

7.2: GeoComm recommends the ISICSB and the regional committees work to complete and distribute a statewide interoperability plan working agreement. (page 7-6)

7.3: GeoComm recommends developing operational protocols that allow standardized interoperability channels on all bands to be utilized for specific traffic on a regular basis. (page 7-7)

7.6: GeoComm recommends that regular training specifically directed toward interoperability and remote technologies be developed for public safety responders and PSAP personnel. (page 7-9)

7.7: GeoComm recommends that the State of Iowa develop requirements for and conduct emergency communications exercises (including drills, table-top, seminars, and full-scale exercises) on a regular basis. (page 7-10)

Section 8: GIS Recommendations

8.1: GeoComm recommends the state develop and sponsor a workshop series to bring together and educate GIS and public safety personnel. (page 8-2)

Section 9: Legislation Recommendations

9.1: GeoComm recommends that the State of Iowa statute be amended to establish requirements for the E9-1-1 Communications Council to conduct a statewide 9-1-1 strategic planning process (Governance Recommendation 2.1). (page 9-3)
9.2: GeoComm recommends that the state 9-1-1 statute be amended to clarify the E9-1-1 Communications Council roles and responsibilities and to assign the Council the authority to carry out the statewide 9-1-1 strategic plan. (page 9-3)
9.3: GeoComm recommends that the proposed statute language not enacted in the previous legislative session be re-proposed in order to align the statute with Next Generation 9-1-1 implementation requirements. (page 9-4)
9.5: GeoComm recommends that once the State Attorney General's opinion on requirements for maintaining an E9-1-1 Service Plan is received, that those requirements, be clarified as necessary in statute or administrative rules. (page 9-6) *Short-term, once determined then long-term*
9.6: GeoComm recommends that if the recommendation to eliminate carrier reimbursement is accepted (Funding Recommendation 3.3) is accepted, that those funds be directed for support of strategic planning, revitalization of the grant program to provide incentives for migration to Next Generation 9-1-1 service and for funding the enhanced activities of the E9-1-1 Communications Council especially that of establishing and maintaining 9-1-1 standards. (page 9-6)
9.7: GeoComm recommends that the State of Iowa modify the wireless surcharge rate to be competitively neutral with the majority of wireline surcharge rates in the state (Funding Recommendation 3.2) and that further evaluation of equalizing wireline surcharge rates among all communities in Iowa be conducted as part of the strategic planning process. If these recommendations are accepted, legislative changes will be required. (page 9-7)

Long-Term Recommendations

Section 2: Governance Recommendations

2.3: GeoComm recommends the State of Iowa establish standards for the efficient and effective delivery of 9-1-1 services. (page 2-7)

2.4: GeoComm recommends the State of Iowa implement 9-1-1 call data collection systems for comprehensive system management and planning. (page 2-9)

2.6: GeoComm recommends that the state E9-1-1 Program Office and the E9-1-1 Communications Council develop a public information campaign to inform the citizens of Iowa of the strategic planning process and the need for migration to Next Generation 9-1-1 services. (page 2-11)

Section 3: Funding Recommendations

3.1: GeoComm recommends that the state identify the actual costs for operating the 9-1-1 call delivery and emergency dispatch operations across the State of Iowa by amending the annual budget format to require total system costs, including personnel and training. (page 3-3)

3.4: GeoComm recommends that the state continue the 25 percent wireless distribution to the PSAPs until a statewide strategic planning process is complete. (page 3-7)

Section 4: Network Recommendations

4.1: GeoComm recommends the State of Iowa rapidly advance migration to Next Generation 9-1-1 Services through aggressive implementation. (page 4-3)

4.3: GeoComm recommends the state develop and adopt more robust and contemporary network standards. (page 4-5)

Section 5: PSAP Operations Recommendations

5.4: GeoComm recommends each PSAP ensure appropriate minimum staffing levels. (page 5-5)

5.5: GeoComm recommends that PSAPs combine all emergency and non-emergency telephone lines into one console for ease of call processing and efficiency. (page 5-6)

Section 6: Technology Recommendations

6.4: GeoComm recommends the ISICS Board pursue funds and establish statewide development of available public safety spectrum. (page 6-5)

6.6: GeoComm recommends that plans be developed and programs implemented that provide remote dispatch services at the same location as remote 9-1-1 services for each PSAP. (page 6-8)

Section 7: Interoperability Recommendations

7.4: GeoComm recommends coordinated regional and statewide training be offered and exercises conducted on a regular basis. (page 7-8)

7.5: GeoComm recommends that adequate VHF and 800 MHz common channels be allocated to handle wide area emergencies on a statewide basis. (page7-9)

Section 8: GIS Recommendations

8.2: GeoComm recommends the State of Iowa determine the accuracy of existing local GIS data and confirm areas where data may not exist. (page 8-3)

8.3: GeoComm recommends development of a statewide GIS data model that includes the Next Generation database standards. (page 8-4)

Section 9: Legislation Recommendations

9.4: GeoComm recommends that if the State of Iowa establishes standards for the efficient and effective delivery of 9-1-1 services, those standards should be codified in statute. (page 9-5)

9.5: GeoComm recommends that the state E9-1-1 Program Office and the E9-1-1 Communication Council seek the State Attorney General's opinion on statute language related to requirements for maintaining an E9-1-1 Service Plan and that those requirements, once determined, be clarified as necessary in statute. (page 9-6)